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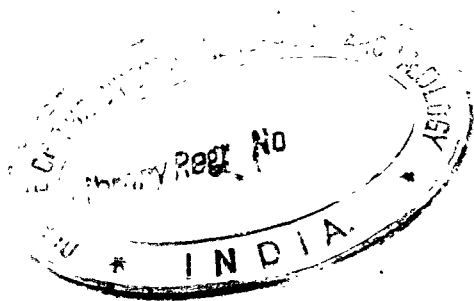
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THE
JOURNAL
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
LONDON.

910.5
J.R.G.S.

VOLUME THE SEVENTEENTH.

1847.

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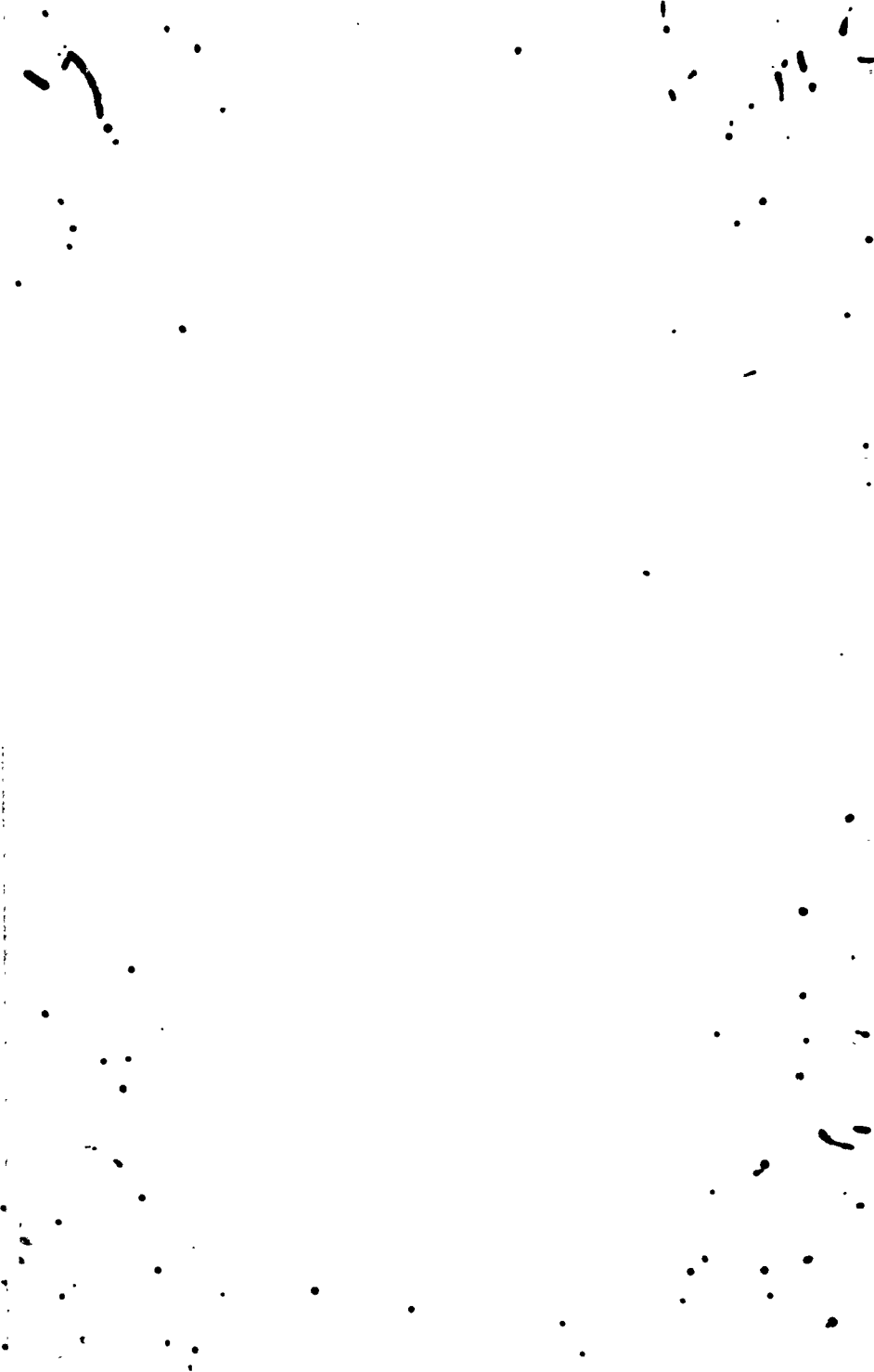
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Royal Geographical Society.

1847.

REPORT OF THE COUNCIL,

READ AT THE ANNIVERSARY MEETING, 24TH MAY.

THE Council have to report that, since the last Anniversary Meeting, there have been elected 19 new Members. There have occurred 42 vacancies, of which 11 are by death, 20 by resignation, and 11 have been struck off for non-payment, and the Society now consists of 672 Members, besides 39 Foreign Honorary and 22 Corresponding Members.

Finance.—In pursuance of the resolution of the Special General Meeting of the 13th of May, 1846, “that the Journal be sold to Members,” the Council entered into an arrangement with Mr. Murray, the publisher, by which (on the understanding that a certain number of Members would purchase the Journal) he undertook to publish it for one year at his own risk, without any charge to the Society. Under this agreement, the two Parts forming Vol. XVI., have been published.

The subject of removing to more commodious and, at the same time, cheaper apartments, has also been fully considered by the Council at successive Meetings; but, after viewing several houses, it was found impossible to obtain a suitable one, in such a situation as appeared desirable, at any reduction of rent which would justify the heavy expense necessarily consequent on a removal of the Society's property to any new abode.

In the month of September last the Librarian, Mr. J. Shillinglaw, having resigned his situation, the Council, at the suggestion of Colonel Jackson (who agreed to undertake the general superintendence of the books and maps without any increase of salary), determined on effecting a saving by abolishing the separate office of Librarian, and substituting a Clerk at a salary of 50*l.* a-year; a Porter and Housemaid being at the same time

appointed at a salary of 30*l.* a-year and lodging in the house, in the place of the messenger, who had received 10*s.* a-week. By this change a saving of 46*l.* a-year was effected.

On balancing the accounts at the close of the year, a deficiency (chiefly arising from the cost of publishing the Journal in 1845) was found, which rendered it necessary to provide 274*l.* 18*s.* 6*d.* beyond the funds in hand. This the Council have done with much reluctance by selling from the funds of the Society 300*l.* Consols; but they felt it a more becoming course than to leave the debt to be liquidated by their successors. Every outstanding debt on the 1st of January was thus paid off, and a small balance kept in hand.

The sum of 200*l.*, the contribution of the Government and the East India Company towards aiding the late Mr. Brockman in his journey to Hadramaut, not having been applied to the purpose originally intended, the Council have directed it to be invested in the three per cent. Consols; this has been done, and stock to the amount of 224*l.* 1*s.* 10*d.* purchased.

Secretaries.—In February Mr. Murray announced to the Council that he must decline to continue publishing the Journal on the terms agreed on. This heavy charge being thus again thrown upon the funds of the Society, it became necessary for the Council once more to consider the whole state of its finances, and Colonel Jackson, in the most handsome manner, offered to release the Council from any difficulty as regarded himself, by tendering his resignation of the offices of Secretary and Editor of the Journal: a Committee was appointed to consider the whole question, upon whose report it was resolved—

1. That both the Secretaries of the Society, Members of the Council according to the regulations, be henceforth Honorary Secretaries.
2. That an Assistant Secretary be appointed, at a salary not exceeding 150*l.* a-year, to perform the duties of the late Secretary and Editor.
3. That an advertisement to this effect be inserted in the 'Times,' 'Literary Gazette,' and 'Athenæum.'
4. That the edition of the Journal be reduced from 1250 to 1000 copies, and that the volume do not exceed thirteen sheets.

5. That the Society revert to the old practice of gratuitous distribution, but that all Members be required to send to the Society for their copies, and that Members not applying within one year shall only be able to procure such copies through application to the Council.

The advertisement produced a large number of candidates, from amongst whom the Council have selected Dr. William Humble as the gentleman best qualified to perform the duties of that office.

The resignation of Colonel Jackson as Secretary and Editor has already been alluded to; and the Council regret to have also to announce that the Honorary Foreign Secretary, the Rev. G. C. Renouard, has again pressed upon them the tender of his resignation, which they felt they could no longer decline to accept. In each of these gentlemen the Society will lose a valuable and efficient officer. Mr. Renouard has for a long course of years given to the Society the gratuitous benefit of his great learning, especially in Oriental literature; and, under Colonel Jackson, the Journal has been most carefully edited, and published with the greatest punctuality; the accounts and correspondence of the Society have been kept with great regularity, and a general Index of the first ten volumes (forming itself a volume of 200 pages, executed entirely by himself, and gratuitously) has been published.

Arrears.—Although every exertion has been made to recover the arrears due to the Society, they amounted, on the 1st of January of the present year, to the sum of 440*l*. Of this sum a very small portion only has since been received; the collector, however, states that the subscriptions for the current year have been, for the most part, punctually paid.

Royal Donation.—Of the two gold medals, the donation of Her Most Gracious Majesty, the Patron's Medal has been awarded to Dr. Ludwig Leichardt, for his explorations in Australia, and especially for his journey from Moreton Bay to Port Essington; and the Founder's Medal to Captain Charles Sturt, for his discoveries in Australia, namely of the rivers Darling and Murray, and more especially for his journey in 1845-6, fixing the eastern limit of Lake Torrens, and penetrating into the heart of the continent to lat. 24° 30' S., long. 138° 0' E.

Library.—The accessions to the library since the last Anniversary Meeting consist of 344 books and pamphlets, 56 sheets of maps and charts, two atlases, several sketches and portraits, and a *fac-simile* of an ancient globe in the public library and museum of Frankfort-on-Maine.

In conclusion, the Council confidently trust that the efforts they have made to place the pecuniary affairs of the Society on a firm basis will, with the co-operation of the general body of the Society, secure its permanent prosperity and stability, and enable it fully to carry out the intentions of its founders; but it must not be disguised that to effect this desirable result the exertions of all must be united to increase the number of its Members, and to provide the funds still required to place its valuable collection of books and maps in that condition which a due regard to their preservation, and easy access by Members, still continues to demand.

ESTIMATE FOR THE YEAR 1847.

Dr.

Cr.

	£.	s.	d.		£.	s.	d.
Balance in the Banker's hands on the 1st of January, 1847	279	8	2	Rent and Fixtures	.	.	263 13 0
Petty Cash in the hands of the Secretary	.	6	5 1	Salaries and Wages :—Secretary and Editor, 150 <i>l.</i> ; Clerk, 50 <i>l.</i> ; Collector, 21 <i>l.</i> ; Messenger and Housekeeper, 30 <i>l.</i>	.	.	251 0 0
Entrance of 20 Members at 3 <i>l.</i> each	.	60	0 0	Office Expenses, including Firing and Lights, Evening Meetings, Stationery, Postages, Carriage of Parcels, Freight, &c.	.	.	100 0 0
Subscriptions of 300 Members at 2 <i>l.</i>	.	600	0 0	Insurance and Advertisements	.	.	5 0 0
Arrears collected	.	50	0 0	Furniture, Repairs, and Fittings	.	.	20 0 0
Dividend on 2278 <i>l.</i> 4 <i>s.</i> 4 <i>d.</i> 3½ per Cents. Reduced, minus	.	71	17 8	Journal	.	.	150 0 0
Income-Tax	.	52	10 0	Miscellaneous Printing	.	.	10 0 0
Royal Donation	.	50	0 0	Books and Bindings	.	.	30 0 0
Journals sold	.	5	0 0	Gold Medals	.	.	46 10 0
Index sold	.	30	0 0	Sundries	.	.	13 17 0
Bornean Church Mission	.	.	.				
		1,205	0 11				
Deduct Government and East India Company's Grants	.	200	0 0				
		£1,005	0 11				£890 0 0

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- Elliot, Rear-Admiral the Hon.
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 *Young, James, Esq.
 Young, Charles Baring, Esq.
 668 *Yorke, Lieut.-Colonel, P.S.

NAMES OF INDIVIDUALS TO WHOM THE ROYAL PREMIUM HAS BEEN AWARDED.

1831.—Mr. RICHARD LANDER, for the discovery of the course of the River Niger or Quorra, and its outlet in the Gulf of Benin, in Central Africa.

1832.—Mr. JOHN BISCOE, for the discovery of the land now named “Enderby’s Land” and “Graham’s Land,” in the Antarctic Ocean.

1833.—Captain Sir JOHN ROSS, R.N., for discovery in the Arctic Regions of America.

1834.—Major Sir A. BURNES, C.B., F.R.S., for the navigation of the River Indus, and a journey by Balkh and Bokhara across Central Asia.

1835.—Captain Sir GEORGE BACK, R.N., for the discovery of the Great Fish River, and navigating it to the sea on the Arctic Coast of America.

1836.—Captain ROBERT FITZROY, R.N., for the survey of the shores of Patagonia, Chile, and Peru, in South America.

1837.—Colonel CHESNEY, R.A., F.R.S., for the general conduct of the “Euphrates Expedition” in 1835-6, and for the accessions to comparative and physical geography relating to the countries of Northern Syria, Mesopotamia, and the Delta of Susiana.

1838.—Mr. THOMAS SIMPSON, [Founder’s Medal.] for the discovery and tracing, in 1837 and 1838, of about 300 miles of the Arctic shores of America.

——— Dr. EDWARD RÜPPELL, [Patron’s Medal.] for his travels and researches in Nubia, Kordofán, Arabia, and Abyssinia.

1839.—Mr. R. H. SCHOMBURGK, [Patron’s Medal.] for his travels and researches during the years 1835-9 in the colony of British Guayana, and in the adjacent parts of South America.

——— Major H. C. RAWLINSON, E.I.C., [Founder’s Medal.] for his travels and researches in Susiana and Persian Kurdistan, and for the light thrown by him on the comparative geography of Western Asia.

- 1840.—Lieut. RAPER, R.N., [Founder's Medal,] for the publication of his work on "Navigation and Nautical Astronomy."
- Lieut. JOHN WOOD, I.N., [Patron's Medal,] for his survey of the Indus, and re-discovery of the source of the River Oxus.
- 1841.—Captain JAMES CLARK ROSS, R.N., [Founder's Medal,] for his discoveries in the Antarctic Ocean.
- Rev. Dr. E. ROBINSON, of New York, [Patron's Medal,] for his work entitled "Biblical Researches in Palestine."
- 1842.—Mr. EDWARD JOHN EYRE, [Founder's Medal,] for his explorations in Australia.
- Lieut. J. F. A. SYMONDS, [Patron's Medal,] for his survey in Palestine and levels across the country to the Dead Sea.
- 1843.—Mr. W. J. HAMILTON, M.P., [Founder's Medal,] for his researches in Asia Minor.
- Prof. ADOLPH ERMAN, [Patron's Medal,] for his extensive geographical labours.
- 1844.—M. CHARLES RITTER, [Gold Medal,] for his important geographical works.
- Dr. BEKE, [Founder's Medal,] for his extensive explorations in Abyssinia.
- 1845.—Count P. E. DE STRZELECKI, [Founder's Medal,] for his extensive explorations and discoveries in the South-Eastern portion of Australia, and in Van Diemen's Land; and for his valuable work, in which he has consigned the results of his observations.
- Professor A. TH. MIDDENDORFF, [Patron's Medal,] for his extensive explorations and discoveries in Northern and Eastern Siberia.
- 1846.—Captain CHARLES STURT, [Founder's Medal,] for his various and extensive explorations in Australia.
- Dr. LUDWIG LEICHHARDT, [Patron's Medal,] for a journey performed from Morton Bay to Port Essington.

PRESENTATION

OF THE

GOLD MEDALS,

AWARDED RESPECTIVELY TO CAPTAIN CHARLES STURT AND
DOCTOR LUDWIG LEICHHARDT.

THE President, Lord Colchester, thus addressed the Meeting:—

“ The Council having awarded one of the medals placed at its disposal by the munificence of the Sovereign, for the furtherance of geographical science and discovery, to Captain Charles Sturt, for his various and extensive explorations in Australia, it is my pleasing duty to remind you of the grounds upon which this honourable distinction has been bestowed.

“ So far back as the year 1827, Captain Sturt, then attached to H. M. 39th Regiment, serving in New South Wales, was appointed, in company with Mr. Hume, to follow up the discoveries of Mr. Oxley. Starting from Mount Harris, he explored the marshes of the Macquarie, and proceeding thence to the N.W. came to the bank of a large river, whose waters were found to be salt. This river he named the Darling, and followed its course about 40 miles, when he was obliged to quit it for want of drinkable water. At the close of the year 1829 Captain Sturt proceeded on an expedition to explore the course of the Murrumbidgee. He traced its downward course, from the furthest point previously reached, for 90 miles, when it delivered its waters into a broad and noble river, which was named the Murray. After descending the Murray for 9 days he passed the mouth of a stream flowing from the N., a little inferior to the Murray itself, its waters turbid but perfectly sweet. This river he considered (as proved afterwards to be the fact) to be identical with the Darling, whose upper course he had discovered in his former journey. From this junction Captain Sturt continued to descend the Murray till it emptied itself into an extensive lake which he named Alexandrina, and which he traversed till stopped by the sand-banks that separate it from the sea at Encounter Bay.

“ The discovery of the two great rivers of New South Wales would of itself give to the enterprising explorer a strong claim to the favour of this Society, but it is to Captain Sturt's more recent journey, undertaken with the view of traversing the whole extent of the continent of Australia from Adelaide to the Gulf of Carpentaria, that I wish more particularly to draw your attention. With this view Captain Sturt quitted Adelaide in August, 1844, with a party composed of Messrs. Poole, Browne, Stuart, and 14 men. Proceeding eastward to the

*Murray, he followed the upward course of that river and of the Darling to Laidley's Ponds, which he reached on the 10th of October. Proceeding thence through a country, hitherto unexplored, to the N.W., he fixed his first depôt in lat. $29^{\circ} 40'$ and long. $141^{\circ} 45'$ on the western slope of the Cis-Darling range, not more than 300 feet above the level of the sea. Here the expedition was detained from January 17 to July 14 by the excessive drought, no rain having fallen between November and the latter date. The country, however, was reconnoitred in every direction, and Mr. Poole made an excursion as far as the eastern shore of Lake Torrens. While at this depôt the heat rose to 133° of Fahrenheit in the shade and 157° in the sun. The consumption of provisions during this long detention determined Captain Sturt to send back one-third of his party, and with the remainder, on the first fall of rain, he moved forward to a spot on the western slope, about 62 miles from the first depôt, where he formed a second, in lat. $29^{\circ} 6'$ and long. $141^{\circ} 5'$. Before advancing from hence upon his main object, Captain Sturt determined to ascertain the nature of the country to the west. A journey of 69 miles brought him to the 'broad, dry, and sandy bed of an extensive lake, apparently 12 miles wide, extending to the S. beyond the range of vision, but coming round to the westward in a northerly direction, in the shape laid down for Lake Torrens.' The basin was found to be composed of sand and salt, with patches of clay and gypsum, and though apparently dry, it was too soft to bear the weight of a man. The basin contained detached sheets of dark blue salt water.

"Returning to the depôt, Capt. Sturt started from thence on the 14th of August, accompanied by Mr. Browne and a part of his men, to penetrate to the N.W. Their route for the first 70 miles lay through a country of sand-ridges alternating with long narrow flats; beyond this they found a more open country, but so dry as to make it difficult to proceed. Continuing to the N.W. they traversed extensive plains subject to inundations; then high and broken ridges of sand 80 or 100 feet high, and fiery red, brought the travellers to a stony desert 50 miles in width, beyond which other sandy ridges appeared, similar to those before passed, as if a flood had swept through the range, making this breach. In lat. $25^{\circ} 45'$ the party found themselves on the banks of a considerable creek, coming direct from the N.N.W., with large and deep pools of water. This greatly raised their spirits. They traced it upwards of 60 miles, but though its bed was full of grass, the country was extremely barren. On the 6th of September they reached lat. $24^{\circ} 5'$ and long. $138^{\circ} 15'$. Beyond this they found a salt lagoon in the bed of the creek, and crossed it to the N.W., but the country became worse and worse, and at length the impracticable character of the country, want of food and water for the horses, and the illness of Mr. Browne, compelled Captain Sturt to retrace his steps, after he had advanced 400 miles from the depôt, and reached within 200 miles of the centre of the continent. The party reached the depôt on the 3rd of October, and, after only six days' rest, Captain Sturt, taking with him Mr. Stuart and some of the men who had been left at the depôt during the former journey, again endeavoured to penetrate northward, but, in

a direction less to the W. For 86 miles he pursued his former route—then keeping more to the N., his route for 40 miles lay through plains. Here he met a splendid creek 240 yards wide and 26 feet deep; crossing it, he proceeded 36 miles further over plains, and then came to the sandy ridges running in the same direction as before. Passing a lake about 12 miles in circumference, but whose waters were now putrid, he again met the stony desert in lat. $26^{\circ} 30'$ and long. $139^{\circ} 34'$, about 55 miles E. of his former journey. He still pushed on to lat. $25^{\circ} 58'$, when the desert nature of the country, and the fear that the pools of water which had supplied him in his advance would be completely dried up by the continued drought, he reluctantly turned his face again to the S., and only just reached the great creek, or river, in time to save his horses, some of whom had actually dropped from exhaustion before reaching it. Captain Sturt traced this, which he named Cooper's Creek, upwards in an easterly direction for 65 miles, when it became salt; and afterwards split into numerous narrow streams coming from an unbroken grassy plain, stretching to the N. and E as far as the eye could reach. A tribe of more than 400 natives were found inhabiting several villages on the banks of this creek. They were a tall race and very peaceable, and appeared to subsist on the seeds of a coarse grass, which they stacked and thrashed out, and the seed thus obtained was pounded by the women. Hence Captain Sturt returned to his depôt, but his difficulties were not yet at an end, for the country between it and Laidley's Ponds had become so burnt up by the continued drought, that it was only by killing some of his oxen, and filling their skins with water from the well at the depôt, that he was enabled to provide a sufficient supply to secure his return, which he at length effected without any loss; but his own health, which had been kept up only by the energy of his mind, so long as difficulties were to be overcome, now gave way, and he was seized with a severe illness, from which he did not recover for many weeks after his arrival at Adelaide.

“For these services in the cause of geographical discovery, for the *energy* and *courage* displayed in confronting difficulties of no ordinary character, for the *prudence* with which further advance was abandoned, when it could only have risked the loss of those intrusted to his charge, for the *conciliatory conduct* to the natives, which not only avoided hostile conflict, but rendered them willing to assist the expedition, and also to excite future explorers to a display of the like qualities, the Council have awarded the medal of the founder, and I have much pleasure in now having the opportunity of delivering it into the hands of a gentleman holding high office in the colony of South Australia, and who will be able to recount personally to Captain Sturt the high value this Society sets upon his labours.”

The President, now addressing himself to Mr. Morphett, said—

“MR. MORPHETT,—I have much pleasure in committing to your hands this medal, the highest token of distinction which the Royal Geographical Society has to bestow for the advancement of geographical knowledge.”

• Mr. Morphett, rising, replied—

• “ I am proud, my Lord, at being the recipient of such an honourable and well-merited testimonial from the Council of the Royal Geographical Society to my friend Captain Sturt. I beg to assure your Lordship that I will deliver this medal to Captain Sturt, and will endeavour to convey to him an impression of the elegant and encomiastic allusions which your Lordship has made to his arduous and valuable services in the cause of science.”

PATRON'S MEDAL.

The President then proceeding, observed—

“ The journey performed by Dr. Ludwig Leichhardt from Morton Bay to Port Essington, a distance of 1800 miles, through a country previously altogether unknown, prosecuted with almost unexampled perseverance, and crowned with the most complete success, opening to the settler in Australia new and extensive fields of enterprise, and connecting the remote settlements of New South Wales with a secure port on the confines of the Indian Archipelago, thus avoiding the circuitous and dangerous navigation through Torres Straits, has been deemed by the Council an enterprise worthy of the medal granted by our Most Gracious Patron the Queen.

“ An account of Dr. Leichhardt's journey having already appeared in the Journal of the Society, I need only remind you, that he quitted Jimba, the furthest station of the Darling Downs, on the 1st of October, 1844, with a party of 7 persons, and followed the course of the range of mountains which runs nearly parallel to the E. coast of Australia, till he reached the S.E. angle of the Gulf of Carpentaria; thence, following the coast to westward, he quitted it where it turns to the N., and, striking directly across the country, reached Port Essington on the 17th December, 1845. Among the most important results of this enterprise, are stated to be the discovery of the Mackenzie river, the Isaack's, and the Suttor, and of an easy communication between the E. coast of Australia and the Gulf of Carpentaria, across the base of the York Peninsula. Coal was found at the Mackenzie, and the Nonda country is described as highly adapted for the pursuits of the agriculturist. Dr. Leichhardt has constructed a detailed map of the country through which he travelled; and an account of the objects of natural history which he collected will shortly be laid before the public by Sir W. Hooker. One of the results of this journey is, that it is entirely the result of our own efforts, and we are so fortunate as to have obtained the presence of one of its principal promoters, Dr. Nicholson, who will receive this medal as the representative of Dr. Leichhardt, who is himself now employed in prosecuting further discoveries.

“ Dr. NICHOLSON,—I have great pleasure in delivering to you the medal of our Most Gracious Patron the Queen, as the mark of this Society's acknowledgment of the increased knowledge of the great continent of Australia gained by Dr. Leichhardt's journey; an award which shows, that neither distance, nor absence, nor foreign birth, renders the

Council unmindful of the merits of a great discoverer ; and we sincerely wish Dr. Leichhardt every success in the still vaster enterprise which he is now prosecuting, and that it may add fresh stores to geographical knowledge, and fresh honour to himself."

Dr. Nicholson rose, and returned thanks, on the part of Dr. Leichhardt, in the following terms:—

"MY LORD,—On behalf of my friend, Dr. Leichhardt, I beg to offer your Lordship my best thanks for the very handsome way in which the Royal Geographical Society has been pleased to acknowledge the services which he has rendered to geographical science by his late expedition to Port Essington. I can assure your Lordship, that even while I bear in mind the very flattering tokens of approbation which Dr. Leichhardt received on his return to Sydney, and the munificent sums of money which have been granted to him by the Colonial government and subscribed by the generous colonists of New South Wales, I still cannot hesitate to say that there is no mark of honour which will be more gratifying and encouraging to him as a man of science than that which your Lordship has just conferred on him in the name of this distinguished Society."

ADDRESS

TO THE

ROYAL GEOGRAPHICAL SOCIETY
OF LONDON;*Delivered at the Anniversary Meeting on the 24th May, 1847,*

BY THE

RIGHT HON. LORD COLCHESTER, CAPT. R N., &c. &c. &c.
PRESIDENT.

GENTLEMEN,—At the commencement of the Address which I had the honour to deliver last year from this chair, I alluded to the expeditions then in progress, or under consideration, for the exploration of countries still little known, and from whose success we might hope largely to augment our stock of geographical knowledge.

The medals this day presented to Captain Sturt and Dr. Leichhardt, for their discoveries in Australia, prove these hopes to have been not altogether unfounded, and the researches of Sir T. Mitchell in the country lying between the routes of these travellers, largely increase our knowledge of that great continent, and lead us to augur favourably of the success of the new enterprise in which Dr. Leichhardt is now engaged.

In Africa our expectations have been disappointed by the abandonment of the proposed journeys of Mr. Duncan and Lieutenant Ruxton; the first not having yet sufficiently recovered from the effects of his former journey to face again the dangers of that deadly climate; and the latter for reasons not communicated to this Society. We learn, however, that a French officer, M. Raffeneil, already known by his explorations in Senegambia, has set out on the arduous task of exploring that continent in its greatest breadth, from W. to E., between the parallels of 10° and 15° N. lat.

The attempts of Mr. Brockman to penetrate into Hadramaut were frustrated by the unsafe state of that country, and we have reason to fear that there is no likelihood of any European traveller being able at present to succeed in such an attempt.

We still continue without accounts of Sir John Franklin and his adventurous companions, but as his ships were fully stored and provisioned for three years, and we may reckon that whatever can be obtained from the united efforts of skill, science, and daring, guided by experience, will be performed, we may still be permitted to hope that success will eventually crown their arduous efforts, and we may rely upon Government's adopting every practicable means of furnishing supplies to such points of the coast as they may be able to approach, if prevented by insuperable obstacles from completing their passage to Behring's Straits. Other explorations in those icy regions are also in contemplation, to which I shall hereafter allude.

OBITUARY.

I must now, for a moment, call your attention to those eminent persons of our own Society, or of foreign reputation, whose loss we have had to lament during the past year. First among these must be placed General Sir George Murray, whose name will be long remembered by his countrymen at large as one of the most distinguished of those great warriors who contributed to restore the blessings of peace to Europe, and as subsequently presiding over the colonies of this empire, but who is more especially to be remembered here, as giving to this Society in its infant state the advantage of that great reputation, by accepting its Presidency in 1833.

We have also been deprived of the Duke of Northumberland, the Earl of Yarborough, the Right Hon. Thos. Grenville, Lord Chief Justice Tindal, and Sir George Gipps, lately Governor of New South Wales. Of distinguished foreign geographers we have to lament the great Russian circumnavigator, Krusenstern, an honorary member of this Society, and to whose kindness we are indebted for a beautiful facsimile of the famous Pizzigani map, constructed in the year 1367, of which the original is in the ducal library at Parma, and of which a more complete notice is to be found in the Address from the chair in 1843; three other copies alone are said to exist.

We have also to regret the loss of the Baron de Minutoli, who is said to have collected at Berlin a library of 40,000 volumes, one-fourth consisting of Oriental manuscripts.

I am happy, however, here to state, that the death of Monsieur Bonpland, the companion of Humboldt in South America, which had been publicly announced, has been since contradicted.

I must also record the loss sustained by the death of the Rev. T. Brockman, who, after the failure of his attempt to penetrate into

Hadramaut, continued exploring the coast of Arabia, and was unfortunately attacked by fever at Wady-Beni-Taber in Oman. His effects and papers having been forwarded to the British authorities in India, we may hope to benefit by the information obtained by Mr. Brockman during his long sojourn in Southern Arabia.

OUR OWN LABOURS.

During the session which is about to terminate, various papers have been read, and formed the subjects of discussion at our evening meetings. Of these I will briefly mention a letter from Colonel von Helmersen to the Society, remarking upon the great similarity between the Australian mountains and those of the Ural chain (being alike in direction, height, and geognostic character), and expressing his conviction that auriferous and platiniferous sands will be found in the former, as they are known to exist in the latter range; he concludes by strongly recommending a strict examination with a view to ascertaining whether such be the case.

From Sir J. H. Pelly we learn, that the Hudson's Bay Company have fitted out a well-equipped expedition for the purpose of surveying the hitherto unexplored portion of the coast at the N.E. angle of the American continent.

The Journal of Captain Sturt, giving an account of his explorations in the interior of Australia, has also been read before the members of the Society, and will appear in an early number of our Journal.

To Colonel Jackson we are indebted for a paper on the history and description of the various systems of representing hills, and the irregularities of the ground in general, on topographical maps. This paper may properly be included under the head of physical geography.

A very important paper by Dr. Beke, on the sources and affluents of the Nile, and which will be found in the forthcoming part of our Journal, has justly claimed the attention of the Society, but as this will be very shortly in the hands of the members, it would be supererogatory to dwell at any length upon it in my present Address.

An account of a voyage up the Tigris, by Lieutenant Jones, has formed the subject of an evening's discussion.

A memoir on the great river of China, the Yang-tze-Kiang, from its mouth to the outlet of the Poyang Lake, has also been read to you. That portion which was ascended by our fleet in 1842, as high as the city of Nankin, has been accurately surveyed by Captains Bethune, Collinson, and other officers of the navy. The upper portion is

described from the journals of those who accompanied the British Embassy in 1816, which ascended this magnificent river from the mouth of the Grand Canal at Kwa-tchoo to the outlet of the Poyang Lake.

A memoir of Baron Wrangell's, "On the best mode of reaching the North Pole," proposes to effect this object by means of dogs and sledges. The Admiral founds his hypothesis on facts collected by himself during a three years' navigation in the Polar Seas, and his plan is as follows:—"The ships of the expedition are to winter near the Esquimaux village under the 77th parallel, on the W. coast of Greenland. There should be previously despatched to this point 10 narty (a particular kind of sledge), with dogs and active and courageous drivers, likewise stores and provisions. In the autumn, as soon as the water freezes, the expedition should go to Smith's Sound, and from thence further towards the N.; on arriving at the 79°, it should seek on the coasts of Greenland, or in the valleys between the mountains, a convenient place for depositing a part of the provisions.

"In February the expedition might advance towards that place, and, in the beginning of March, another station, two degrees further N., might be established. From this last point, the polar detachment of the expedition would proceed, during March, over the ice, without leaving the coasts, or keeping along the valleys, or on the ridge of the mountains, as may be found most convenient; but deviating as little as possible from the line of the meridian, and shortening the distance by crossing the straits and bays."

The expedition, to reach the Pole and to return, must traverse, in a direct line, nearly 1200 miles, and, including all deviations, perhaps not above 1530 miles, which Admiral Wrangell considers would be very practicable with well-constructed sledges, good dogs, and proper conductors. While on the subject of Arctic exploration, we may briefly notice that Captain Sir John Ross, of the Royal Navy, so well known for his attempts to discover a North-West Passage, has written to the President of the Royal Astronomical Society, informing that learned body of his proposal to the Admiralty to proceed to Spitzbergen, for the purpose of measuring an arc of the meridian, and of endeavouring to reach the North Pole on sledges drawn by Swedish horses. Sir John conceives that former attempts have failed because a wrong season was chosen; he considers the months of April and May to be those best suited for the purpose. He proposes wintering at Spitzbergen, so as to start from thence at the proper season.

Papers on the N.W. coast of Borneo, by Mr. W. S. Harvey; on the

volcano of Saddle Island, by Lieut. Barker; on Dr. Morse's system of cerography; and one furnishing the details of a route in a part of the Sahara from Ghat to Twat, have been under consideration.

The Society has also had brought before it a paper by Governor Ingram, on the Gambia river and Settlement; from this we learn that treaties have been concluded with many of the small states on the banks of the Gambia for the extension of our commerce and the total extirpation of the slave trade. Governor Ingram gives us some very pleasing and satisfactory statements concerning the condition of the liberated slaves, colonized on the banks of the river.

And, in conclusion, you have lately heard a very detailed paper on the Physical Geography of Lower Canada, by Mr. Wittich, describing the climate, the general features, and the productions of the three portions into which, for the purposes of his subject, he divides the country.

MARITIME SURVEYS.

Home.—The surveys of the coasts of the British dominions, under the direction of the Admiralty, which were fully detailed in the Address of last year, continue to be prosecuted, with their accustomed zeal and ability, by the officers employed on them, but they present no new features requiring special notice.

Foreign.—Captain Sullivan has returned from his labours on the river Plate, and has made a most interesting sketch-chart of the Parana as high as Corrientes. Captain Denham has also returned, having finished the survey of the coast from Cape St. Paul to the river Nun.

AUSTRALIA.

Australia.—By recent accounts from Australia we learn that Dr. Leichhardt proposed to start, in October last, on a new journey of exploration into the interior. Captain Sturt's expedition having shown that the interior, in the long. of the head of the Great Southern Gulf, is a desert, at least to lat. 24°, it would be useless to attempt to cross the continent in that or in a higher latitude: Dr. Leichhardt has arranged the following plan; namely,—to proceed at once to lat. 23°, where in his last journey he found the Mackenzie and Peak range; and, as the Mackenzie was well supplied with water, to follow it up to its sources, which he calculates on finding about 80 or 100 miles to the westward of the spot where he before first came to that river. He considers he shall then be able to ascertain whether the western

branches of the supposed watershed go down to the southward to join the system of the Darling, or whether they turn to the northward and form the sources of the largest rivers of the head of the Gulf of Carpentaria. Should the latter be the case, and should the country be sufficiently well watered, he would proceed to the westward, keeping the same latitude, and endeavour to reach the waters of the N.W. coast. But should want of water not permit him to continue his journey to the westward, or even to the northward, he will then retrace his steps down the Mackenzie, and follow the track of his last journey up to the Burdekin, where it is joined by the Cape in lat. $19^{\circ} 12'$.

In following the latter river, Dr. Leichhardt entertains no doubt of finding the heads of the Flinders, after crossing either a table-land or a dividing range. He then purposes continuing his journey to the Albert, following up its course to ascertain the latitude of its sources and the nature of the country. The whole of the journey, he hopes to perform in two years.

Accounts have very recently been received of an important journey performed by Sir T. Mitchell, with the object of reaching the Gulf of Carpentaria from the Darling, of which I must endeavour to give a sketch, although we have not yet received the details, except through the public prints.

Sir T. Mitchell started from the junction of the river Macquarrie with the Darling, in lat. $30^{\circ} 6'$ S. and long. $147^{\circ} 33'$; proceeding to the N., he crossed the Narran Swamp, and thence ascended the river Balonne, to a hill range in lat. $26^{\circ} 33'$ and long. $149^{\circ} 2'$. This he named "Fitzroy Downs." Beyond this range a river was discovered flowing to the S.W., fully as large as the Darling; it was called by the natives Maranoa; and was afterwards found, as well as the Balonne, to join the Darling. From hence Sir T. Mitchell traced the Maranoa upwards to a chain of mountains with volcanic summits; passing between these and a higher range towards the coast, he at length reached another chain of mountains extending westward, about the 25th parallel of latitude. A difficult sandstone country succeeded; on emerging from its ravines, a river, the Belyando, was struck, flowing, when first seen, to the N.W. The expedition encamped on it, in lat. $24^{\circ} 0'$, and long. $147^{\circ} 17'$. After following its course as far N. as $21^{\circ} 30'$, it turned to the N.E., and was recognised as the river "Cape" of Leichhardt.

Hence the party retraced their steps to the camp in lat. $24^{\circ} 30'$. The syphon-barometer gave the mean height above the sea of the range crossed in lat. 25° as exceeding 2000 feet.

Starting afresh from this camp, Sir T. Mitchell reached a gap in the westerly range, in lat. $24^{\circ} 50'$, and long. $146^{\circ} 42'$. On ascending the range he saw open downs and plains, with a line of river in the midst, extending to the N.N.W., as far as the horizon. He pursued the course of this river during ten successive days, the furthest point which he reached being in lat. $24^{\circ} 14'$, and long. $144^{\circ} 34'$. Here from a rising ground he could trace its downward course far to the northward. A range, showing sandstone cliffs, appeared to the southward, in about lat. $24^{\circ} 30'$, and long. $145^{\circ} 0'$. Sir T. Mitchell describes the whole of this country as the best watered portion of Australia that he had seen. New birds and new plants mark this out as a region different from any previously explored.* He feels convinced that the estuary of this river is in the Gulf of Carpentaria; and, at all events, that the country is open and well watered for a route thereto.

From this point Sir Thomas was obliged to return; and his account of his journey was forwarded from the dépôt on the Darling, from which he originally started.

This journey is not only exceedingly interesting in itself, but, considered in connexion with those of Sturt and Leichhardt, completes our knowledge of the general physical features of the S.E. portion of Australia, which may now be considered as one great basin, watered by the Darling and the Murray, and their numerous tributaries, all rising in the eastern or coast range; while the western side is a desolate country, of lower elevation, deprived, so far as we know, of any running streams. We are happy to learn that that able geographer Mr. John Arrowsmith is preparing a new map of this country on a large scale.

EUROPE.

France.—M. Vivien de St. Martin has published the fifth series of his 'Nouvelles Annales des Voyages;' and the same indefatigable author has also given to the world his 'Recherches sur les Populations du Caucase.'

M. J. J. Nicolas Huot has rendered an important service to our science by a translation into French of Pomponius Mela's work, 'De Situ Orbis.' The translation is enriched with numerous notes, while many obscure passages in the text have been elucidated.

We are happy to see, by the 'Bulletin de la Société de Géographie de Paris,' that attention is being awakened to the important subject of

* The natives were few and inoffensive.

geographical orthography. The advantage of uniformity in the spelling of the names of places must be evident to all, and this advantage is still further enhanced by attention to proper orthography. Of all the various ways in which a name may be written, there can be but one that is correct, and the discovery and adoption of this one is certainly an object to which, as geographers, we cannot be indifferent.

The Abbé Roudon has addressed a memoir to the Academy of Sciences of Paris on the determination of a fixed first meridian, but we have not learnt the result.

Spain.—From our corresponding member Don Jose d'Urcullu we learn, that the principal master of the Museum of Engineers at Madrid has published models of Teneriffe and Villa Franca di Nisa, made by himself.

The Geographical Dictionary of Madoz, mentioned in my Address of last year, is proceeding steadily: four volumes are already published, and the fifth is in the press. The work is to consist of 18 volumes.

The great map of Majorca, in 4 sheets, illustrated with views of Palma and some other towns, was to be published on the 30th of April.

Italy.—A large map of Italy, on a scale of $\frac{1}{250,000}$, is in the course of execution, under the direction of the Imperial Military Institute of Vienna. In this map Rome constitutes the meridian.

A map of Italy, in 28 sheets, on a scale of $\frac{1}{333,333}$, has just been completed by the Messrs. Civalli, of Milan, who have dedicated the work to the Chevalier Adrien de Balbi.

Captain Arregoni has also published at Milan, remarkable alike for its correctness and the beauty of its execution, a map entitled 'Carta Postale dell' Italia dietro i migliori materiali.' At Parma, a general map of Italy, in 6 sheets, by Captain Azzi, has been published; and one of Pisanja, by the engraver Piazzini.

Milan.—At Milan have appeared some works mediately and immediately connected with geographical inquiry; of these we would more particularly refer to the 'Dizionario Corografie Universale dell' Italia,' a work the production of some Italian *savans*, and of which several parts have already appeared—of Lombardy and the Duchy of Parma; and also the 'Miscellanea Italiana,' a collection of original memoirs on geography and statistics, from the pen of M. Adrien de Balbi, and revised by the son of the author, M. Eugène de Balbi. We may also notice the 'Topografia Storica di Milano,' and a work entitled 'Notizie Naturali e Civili pello Lombardia.'

Zara.—An important publication by Mr. Carrara, under the title 'La Dalmazia Descritta,' has been published in Italian, in which we

find a clear and lucid exposition of the physical and political geography of Zara.

Turin.—The Superior Commission for Statistics has published a volume on Sardinia, and also one on the subject of criminal statistics. The Geographical, Statistical, and Commercial Dictionary, of Mr. Cassolis and his coadjutor Mr. Anguis, is continued, and its publication appears from time to time; as do also the Topographical and Statistical Works of Captain de Bartolommeij and Mr. Dho. •

Sardinia.—Major-General Ferraro di Marmora has published a map of Sardinia, on the scale of $\frac{1}{250,000}$.

Florence.—At Florence geographical inquiries and studies are prosecuted with much earnestness. The publication of the work 'Corografia dell' Italia,' forming 18 volumes 8vo., with an Atlas of 144 maps and 260 illustrations, is just completed. Repetti's 'Dizionario Geografico Fisico Storico della Toscana,' with a Supplement, forming the sixteenth volume of this remarkable work, has recently been brought to a close.

Mr. Salvaguoli Marshatti, Medical Inspector of Grossetto, has published a 'Memorie Economico Statistiche sulle Marremme Toscane,' a work abounding in statistical details of an important character, relating to that portion of Italy heretofore but little known. The publication of the volume entitled 'Geografia Politica dell' Italia,' by Mr. Biouelis, is being continued; as is the work by Mr. Marmoulie, the 'Podromo della Storia Naturale generale e comparata d' Italia.'

Naples.—General Visconti informs us that, during the past year (1846), the field operations of the Engineers of the Topographical Office were greatly obstructed by the great dryness of the season, which kept the mountains of Calabria, as seen from the island of Stromboli, hidden in continual clouds, so that the triangulation of the first order along the meridian from Termoli to Cape Passaro could not be carried on, and they were only able to determine some secondary points in Calabria.

In the present year, requiring some geodetic points for the Map of the Kingdom, on the scale of $\frac{1}{250,000}$, towards the frontier, it has been found necessary to employ the whole of the operators in determining points of the second and third order toward that frontier; deferring the operations on the arc of the meridian till they can be resumed with a greater force of persons and instruments. The triangulations of the second and third order advanced during 1846 considerably towards the northern frontier, and to the N. of Lake Fucino. The delineation of Lake Fucino is completed, as well as that of the country that summits

it, as far as the parallel which passes about a mile to the S. of Monte Velino. The topography of the country surrounding Naples has been revised, in order to add all the details of the ground which had not been inserted when the plan was originally drawn—that is, before 1820.

With regard to the internal labours of the office, much progress has been made in engraving the great Map of the Kingdom on the scale of $\frac{1}{660000}$: the statistical and road map of the kingdom, on the scale of $\frac{1}{810000}$, commenced two years since, is also much advanced. Some plans of the collection of Ports of the Mediterranean for the use of the Royal Navy, are also engraved.

Orography.—The frequent eruptions of Mount Vesuvius must necessarily produce variations in the height of the borders of its crater, and, accordingly, M. Elie de Beaumont, in a letter to our countryman Mr. Pentland, has expressed the desire that the height of Punta del Palo be very exactly measured every year, or at least once in ten years. On this subject M. Cangiano has written to M. Elie de Beaumont, stating the mode by which this admeasurement may be best effected. It would appear that the Punta, measured by M. Amanti on the 27th February, 1846, was 1203 metres above the sea; and that the burning cone was then 9·5 metres lower than it; but that, measured again on the 31st March, the latter had risen 2·7 metres.

Naples.—Of the various publications which have recently appeared at Naples, we may allude to that by Mr. Salvatore di Renzi, under the name of ‘*La Topografia e Statistica Medica della Città di Napoli*,’ not confined to statistical details of that city only, but embracing also many scientific and learned considerations relative to the whole kingdom of the Two Sicilies.

Austria.—At Vienna is being prepared, by the Imperial Military Geographical Institution, a general Map of Tuscany and of the Papal States, on a scale of $\frac{1}{360000}$; being a continuation of those heretofore published of Venetian Lombardy, and the Duchies of Parma and Modena.

Under the same authority has been recently published, the result of the trigonometrical operations executed by Marieni in the years 1841, 1842, and 1843, in which will be found many important new altitudes, which were previously wanting in the orography of Italy.

• *Russia.*—Sir Roderick I. Murchison has received a communication from Admiral Lütke, of an intended Russian expedition of discovery along the Uralian chain, being the first enterprise of the Imperial Geographical Society of St. Petersburg, a Society founded on the

model of the Royal Geographical Society of London. Colonel Hoffmann (the companion of Colonel Helmerson in his Siberian tours) is the chief of the expedition, and is already on his way to Perm, accompanied by M. Kowalsky as astronomer. At Perm he will be joined by M. Strajefsky, the previous explorer of that part of the chain N. of Bogoslofsk, who will act as second in command. Branth, the faithful companion of Middendorff, is the naturalist of the expedition.

This summer will be passed in reaching the 65° N. lat., the parallel previously attained on the Asiatic side by the labours of Strajefsky; and, in the ensuing year, it is hoped that the glacial sea will be reached.

Finland.—M. Leozon de Luc, who has published a work on Finland, proposes going again to that country, and asks instructions of the Academy of Sciences of Paris.

AFRICA.

M. Rochet d'Héricourt, whose first travels in Abyssinia, in 1839 and 1840, you are already acquainted with, has just published the account of his second visit to the same country; he had already, as I stated in my last Anniversary Address, furnished the Geographical Society of Paris with some of the results of his second voyage. The whole of his late labours have now been submitted to the examination of a Committee of the French Academy of Sciences.

M. Rochet had embarked from Marseilles in January, 1842, and returned at the end of 1845. The report of the Academy is very favourable to M. Rochet's exertions.

He has taken the respective bearings of leading positions from the points already determined, and made a considerable number of meteorological observations, not only at Angobar and Angolala, but also at Kosseir and at Moka. The magnetic declination was also observed by him at Malta, at Alexandria, at Cairo, at Denderah, at Kosseir, at Djidda, at Mokha, at Ambabo, at Ganbadi, at Angolala, and at Ankobar.

The geology of the country through which he passed has not been neglected by the traveller, who has likewise collected many plants, some of which are new.

The tides of the Red Sea were observed by M. Rochet, whenever he had an opportunity, and it appears from his observations that the mean diurnal variation at Moka, on the N. of the Strait of Babel Mandeb is 0.6 metre; but that it is much greater at Ambabo, to the S. of the strait. M. Rochet's narrative contains, moreover, some interesting

details on the character, manners, and religion of the people of those parts of Abyssinia visited by him; and, on the whole, whether as confirmatory of the statements of other travellers who have lately explored that part of Africa, or as supplying fresh matter, is a most welcome addition to our knowledge of Abyssinia.

We sincerely regret to learn that no accounts have been received of *M. D'Abbadie* since early in 1845; nevertheless, his friends are sanguine of his return, attributing the absence of all communications rather to the difficulty of forwarding them than to any personal disaster. We trust that these opinions may be realized in his safe return.

On the dark side of the picture of geographical research, we lament to place the assassination of *M. Maizan*, an officer of the French navy, who has fallen a sacrifice to native jealousy or native cupidity. This young and zealous officer purposed proceeding direct into the interior of the country bordering the Zanzibar; he had made considerable progress, when the too murderous blows of the assassin terminated at once his discoveries and his life. Of *M. Kraff* also we regret to learn that very serious fears are entertained lest he have shared a similar fate.

M. Raffinel, whose exploration of the River Falúné, and of the gold-mines of Keniébe, in Senegambia, in the years 1843-44, was mentioned in my predecessor's anniversary address for 1845, has undertaken the very difficult and hazardous task of exploring the African continent in its greatest breadth, from W. to E., between the parallels of 10° and 15° N.; and the French Academy of Sciences, ever ready to further the views of adventurous travellers for the benefit of science, have furnished *M. Raffinel* with all the necessary instructions for his researches. The general questions supplied to him have been drawn up by *M. Freycinet*, and special questions by the indefatigable *M. Jomard*, besides particular instructions on various subjects by other savans. Thus the means have been afforded him of acquiring valuable information on the historical traditions of the people and their government, their manners, customs, laws and religion, and their industry: on the soil, the geological formation, the productions of the country and its climate. The study of the winds has been particularly recommended to him, and the desirableness of ascertaining, if possible, whether the W. wind which blows from the Atlantic a little to the N. of the Equator be due to the rarification of the air over the African continent pointed out: as also whether it be true, as affirmed, that in the latitudes he is about to traverse the wind from the S. be hot, in which case it is probable that no high mountains lie in that direction;

or that if they do, they are further removed than the position of 10° , in which a chain is laid down on the maps. The traveller's attention has also been called to the importance of meteorological observations generally, and to the advantage that would accrue from hourly readings of the thermometer and barometer, at different stations on his route, and the method pointed out by Boussinghault for ascertaining the mean annual temperature of any place particularly recommended to him, as well as the observation of maxima and minima temperatures. Observations for lat. and long. have been properly stated as most desirable, there being on the line of his journey but three points ascertained, viz., Sakkatou, Aussa, and Kobe, in Darfour: the magnetic variations will also be observed. With the detailed instructions thus supplied to him by the Academy of Sciences, and in possession of various inedited memoirs and itineraries of parts of the country he is about to explore, furnished with the more essential instruments, and gifted with the necessary moral qualifications, and already acclimated, and experienced in dealing with the natives; there is every reason to hope that M. Raffenel's exploration will produce important results to geography and to science in general: he assuredly has our best wishes for his safety and success.

It is also reported that four Italians (missionaries) are about to explore simultaneously, but by different routes, the central parts of continental Africa, throughout the large space comprised between the Sahara and the Congo, the Senegal and Abyssinia. This combined exploration is said to have been a favourite project with Gregory XVI., and the present pope appears to enter on the plan of his predecessor with much goodwill.

Madagascar.—The projected voyage of M. Leguillon to Madagascar, we understand, is not to take place; and the instructions which had been drawn up for the traveller have been sent to the governor of the Isle of Bourbon, to be given by him to such surgeons of the French navy as may have an opportunity of exploring in Madagascar.

AMERICA.

United States.—The report of the Secretary of the Treasury affords us information of the progress made during the last year in the surveys of the line of coast. His report embraces the operations of the different surveying parties in the field, and the office work, including computations, drawing, engraving, and publishing of maps and charts. The plan on which the work has proceeded during the past two years,

contemplates the survey, at one and the same time, of different sections of the coast, and the publication of the resulting maps. Thus in 1844-45, the triangulation was begun in North Carolina, and a reconnaissance made on the Gulf of Mexico, from Mobile Bay westward and eastward. At the same time the work was vigorously prosecuted in the eastern section, and in the Chesapeake section, and unfinished parts were completed on the coast between Point Judith and the Capes of the Delaware.

In 1845-6 the operations on the Chesapeake have been resumed, the number of parties in North Carolina increased, and the triangulation on the Gulf of Mexico commenced. The reconnaissance of the coast of South Carolina, Georgia, and the coast of Texas, has been ordered. The discovery of the New South Shoal off Nantucket is important, lying six miles S. of any known danger, in the usual track of vessels between New York and Europe, out of sight of land, unmarked and unknown except to the lost.

From these surveys, it appears that the line of coast has been much under estimated hitherto. It is now proposed to divide the whole extent of shore-line into nine sections, by which arrangement the survey may be completed within a limited period; in 1847-48 six of these sections will be in full activity. During the past year fourteen surveying parties have been employed in fourteen States, but the existing hostilities between the United States and Mexico have been productive of delay and interruption, from the withdrawal of all the officers of the line for military service.

The magnetic telegraph has been used to ascertain the differences of longitude between the Washington and Philadelphia observatories, as an introduction to operations on a large scale.

Charts of New Bedford and Annapolis Harbours have been published; also the chart of Fisher's Island Sound, and the middle sheet of Delaware Bay and River; the chart of Little Egg Harbour, and a sketch of the newly discovered South Shoal off Nantucket. A chart of New Haven Harbour is stated to be ready for printing. The charts of New London and Syopet Harbours are nearly engraved.

The labours of the hydrographic party have been rewarded by the discovery of a shoal to the southward of that known as the Nantucket South Shoal; and of a shoal spot in the Vineyard Sound, where it was supposed there was deep water. These discoveries are important services to the intercourse between Europe and the United States, the dangers brought to our knowledge lying, as it were, in the very highway of each.

West Indies.—The West Indian Archipelago, and the Island of Guadaloupe in particular, has been minutely examined by a French traveller, M. Charles Deville, who was witness, at the latter island, of the earthquake of the 8th of February, 1843, the most disastrous with which it has ever been afflicted. He has correctly surveyed the southern and most difficult portion of the island, and has corrected the configuration and relative position of some of the other islands. He has determined the heights of 150 points in Guadaloupe, and found, from a mean of many observations, that the highest peak is 1484 metres above the sea. It may be here stated, that M. Deville, having made an excursion to Teneriffe, to the Cape Verde Islands and Barbadoes, observed in the first of these islands the height of its peak, to which he gives 3706 metres—the mean of six other observers being 3702. At Trinidad, Porto Rico, St. Thomas, and Guadaloupe, very numerous and very exact meteorological observations were made, the results of which, said to be of the greatest interest, will no doubt be published. In the West India Islands, the temperature of their rivers, lakes, and springs has been carefully observed, as also the temperature of the sea around them and of the ocean, in his trip to and from Teneriffe. The high temperature of the ocean, observed by M. Deville, between Guadaloupe and Bermuda, is a new fact in science. M. Deville has also confirmed the fact of the difference, all reductions made, in the indications of the barometer at the level of the sea at different places, and corroborated the curious results arrived at by Erman on this subject. Terrestrial magnetism and geology have also, particularly the latter, been carefully observed by M. Deville, whose work will no doubt be one of very great interest.

• *Central America.*—Mr. M. Hurtado has taken his departure for the Isthmus of Panama, where he intends making observations on Physical Geography, being supplied for that purpose with instructions from the Paris Academy of Sciences.

North America.—M. Morelet is travelling in Mexico and the neighbouring countries, as a naturalist and antiquarian; and, as he has been supplied with both general and special instructions, it is hoped he will glean much interesting and valuable information.

• *South America.*—M. Castelnau, we learn, has sent home from Lima, and still more recently from Cuzco, some information respecting the countries he has visited, and procured a complete list of all the earthquakes which have been felt in that city from 1820 to 1846.

• M. Castelnau has also addressed to the French Minister of Public Instruction a report of his expedition from Cuyaba to the frontier of

Paraguay. His route lay through a country almost unknown to Europeans. Leaving Paraguay, he entered the great Lake Gaïva, a bay said, by the natives, to communicate with the Uberava. This river M. Castelnau proposes to name Rio Pedro II. in honour of the emperor. The best maps, the writer states, mark not fewer than four or five imaginary rivers.

M. Castelnau proposed returning from Cuzco by the route of the rivers Apurimac and Ucayale to the Amazons, which he would descend to Para, and thence proceed to Cayenne.

The exploratory expedition of the Amazons, which was to have been executed under the direction of M. Tardy de Montravel, has been postponed, as appears from a communication made by the Minister of Marine to the Academy of Sciences, in the beginning of last January.

Other French travellers are preparing to explore different portions of the continent of South America. M. Hellert proceeds to the isthmus of Darien; M. Morelet is about to examine the natural history of Guatemala; M. d'Anet will explore the interior of Brazil; and M. de Marcey has lately quitted the region of Paraguay to descend into the Pampas and the solitudes of the Rio Negro.

FOREIGN CORRESPONDENTS.

ASIA.

We have been favoured by M. Biot with a communication, from which we regret to learn that his valuable labours, as regards the publication of the second portion of his Essay, have been for a time suspended, in consequence of domestic bereavement. Of the former part of this Essay, you will find some particulars in my Address of last year.

China.—Mr. Stanislaus Julien has produced a most valuable translation of the Chinese description of the province of Ili, which, though probably somewhat dry, and but little attractive to the general reader, yet contains important scientific facts, and is the more valuable as enabling us to add to or correct the maps of Central Asia, published some time since by M. Klaproth. It is, we are happy to hear, the intention of Mr. Stanislaus Julien to continue his labours, and to translate many other descriptions of provinces connected with the, so-called, Celestial Empire. He purposes also to make us acquainted with the account of certain expeditions undertaken by the Chinese in Central Asia, thus rendering to geographical science and discovery

very valuable service, by making us more intimately acquainted with the interior of a vast country hitherto nearly closed from our inspection.

M. Schrenck, a Russian voyager, has made some very interesting excursions towards the frontiers of Central Asia, visiting the countries in the vicinity of the lakes Balkach and Alactougoul. The particulars of these excursions have been published at Petersburg, by M. Baer.

Hong Kong.—A map of this island, on the contour principle, giving the heights at every 100 feet, has been completed by the officers of the Royal Engineers.

Historical Geography.—For a long time past, two of our most valued foreign members, each with an ardent desire for truth, but each very naturally anxious to find in favour of his own country,—the Viscount de Santarem and M. Détéval, have been at issue on the subject of priority of discovery between the Portuguese and French navigators to the south of Cape Bojador. The honourable zeal and the extensive researches of the disputants command our admiration; and without venturing to pronounce in favour of either, we cheerfully acknowledge our obligations to both for the mass of curious facts which they have severally collected in support of their views, and which is all so much valuable addition to historical geography.

Subjects cognate to Geography.—M. Grange, it appears from the ‘Comptes Rendus,’ has printed, though not published, a memoir, entitled ‘Recherches sur les Glaciers, les Glaces flottantes, les Dépôts Erratiques, sur l’Influence des Climats, sur la Distribution Géographique et la Limite inférieure des Neiges perpétuelles, et études du phénomène erratique du Nord de l’Europe.’ The matters thus treated of by M. Grange are not only highly interesting in themselves, but constitute some of the most important problems of physical geography.

To the same department of our science belongs also a memoir of M. Alexis Perry on earthquakes; by which it appears, that in 1845 there were no less than fifty felt in Europe, distributed equally over the seasons, though it was previously believed that the autumn and the winter were the seasons most subject to them.

The ‘Comptes Rendus,’ 25th May, 1846, contains a memoir by M. Dureau de la Malle, tending to establish, in opposition to the work of Dr. Fuster, that the climate of France has not changed in modern times. M. Dureau de la Malle intends to follow up the subject by a memoir on the Ancient and Modern Climatology of Italy. In the number of the 15th of June, however, will be found Dr. Fuster’s answer to M. Dureau de la Malle,—and in the number for 29th June,

p. 1080, M. Dureau de la Malle's rejoinder ;—last reply of Dr. Fuster, 10th August, p. 299.

The geographical distribution of plants, a branch of our science raised into its well merited importance by the labours of Humboldt, Wahlenberg, R. Brown, Schow, de Mirbel, de Candolle, de St. Hilaire, Martius, &c., who have laid down its laws, is entitled to the best attention of those who have a just appreciation of the vast range of intimately connected subjects implied by the general term Geography ;—it is accordingly my duty in the present address, to point out where any additional information on the geography of plants may be found. I will therefore state, that in the 'Comptes Rendus' of the Academy of Sciences of Paris, of the 29th June, 1846, you will see the very interesting report on a valuable memoir by M. Ch. Martius, entitled an 'Essay on the Climate and Vegetation of the Northern Estuary of Norway.'

MISCELLANEA.

An historical sketch by Mr. Francis Dutton, a resident in South Australia, and having a considerable stake in the well doing and prosperity of that important colony. This work gives an account of the discovery of the vast mineral treasures of South Australia, which, though declared to exist, by Menge, a German, were accidentally discovered by the youngest son of Captain Bagot, whilst gathering flowers, and subsequently by the author.

The topography of the harbours of Athens, by the late Professor Ulrichs, a small, but interesting treatise, has been translated from the modern Greek by Mr. E. Pye Colquhoun.

A dissertation on the knowledge of the Passes of the Alps possessed by the Roman historians, under the title of 'Some Remarks on the Alpine Passes of Strabo,' has been printed by a member of our Society, W. J. Law, Esq.

A second volume of Humboldt's 'Kosmos' has appeared since my last address, but not having yet appeared in an authorized English form, I am obliged to content myself with the bare announcement.

Our learned honorary member, the Chevalier Balbi, has published his "Essay upon the Population of Portugal from the Time of the Romans to the present date." After stating the great diversity in the accounts of former writers, caused by the deficiency of accurate data, he proceeds to show that the population, which by the census of the Emperor Augustus amounted to 2,841,000, had decreased in 1580 to 1,000,000, after which it increased regularly up to the year 1807, when it reached

3,199,000. The war with France, and the emigration of the royal family to Brazil, caused a diminution, so that, according to Colonel Franzini, it was reduced on the 1st of January, 1815, to 2,959,000, since which date it has gradually recovered, till in 1841 it amounted to 3,460,000.

Atlases.—I have in my last year's address called your attention to the very beautiful and improved edition of Berghaus' Physical Atlas of Mr. Alexander K. Johnston, of Edinburgh, which is now drawing to a conclusion, and which, but for the extraordinary demand made by the proprietors of railways on draughtsmen and engravers generally, would have been completed by this time. Of the ten numbers promised, have already appeared; and the work will, in all probability, be finished by the end of the year. The execution of these maps is beyond all praise; and while the atlas reflects honour on the skill and ability of the enterprising publisher, it is admirably calculated for calling attention to that most interesting and important object, physical geography, to the study of which I must again invite all who would derive from our science all the delight and the practical benefits it is competent to yield.

Within the last few weeks Mr. Betts has published an atlas containing some new features, and rendered extremely valuable by a most copious index, comprising nearly 60,000 names of places. In addition to the longitudes and latitudes usually given, there is an arrangement of letters round the margin of the maps, by referring to which the situation of any required place can easily be learnt. We must, however, observe that this arrangement of marginal letters is not now introduced for the first time, as Captain Mangles, R.N., a member of this Society, had some years since brought forward a similar mode of easy reference. Several entirely new maps of India, Canada, Polynesia, &c. are introduced.

An atlas has just been announced by Mr. John Sharpe, which we notice in consequence of a peculiarity that is undoubtedly a step in the right direction. While in every atlas with which we are acquainted there are as many scales as maps,—in the present atlas, consisting of between 50 and 60 maps, the number of different scales is reduced to four, which are denominated Continental, Intermediate, Divisional, and Enlarged. The Continental, which is the smallest of the four scales, comprises 45 by 60 equatorial degrees; the Intermediate are twice this size, or $22\frac{1}{2}$ by 30 degrees; the Divisional, five times the Continental, or 9 by 12 degrees; and the Enlarged, fifteen times the Continental, or 3 by 4 degrees. By this arrangement both

the linear dimensions and the superficial extent of countries may be compared with facility and dispatch. A greater uniformity of scales than generally prevails among our map-makers is very desirable on many accounts; one of the most obvious disadvantages of a great variety of scales is the great time that is lost in seeking for a place whose approximate distance from some capital or principal town is known, but the eye being unaccustomed to the scale, much time is lost in seeking for it. It is, however, but fair to notice that it is not so much the map-makers as the publishers who employ them that are to blame. The representations of the map-maker are frequently unheeded, because the maps must be made to a given size, and thus the advantage of the science is sacrificed to the convenience of the publisher.

Conclusion.—Permit me, in conclusion, to advert for a moment to the present state and future prospects of the Society. The Report of the Council has so fully detailed the financial reforms which it has adopted since the last anniversary, and which you have now confirmed, that I will only add my own conviction that, if fully carried out, the Society will be entirely relieved from the fear of any deficiency in the means of meeting its ordinary expenses, without any decrease in the efficiency of its operations, except a reduction in the size of the Journal, which we may hope will only be temporary, and that increasing funds will soon enable the Council to restore it to its former bulk. It would doubtless be very desirable to possess more commodious apartments for holding our continually increasing collection of books and maps, but I fear we must not at present look for any assistance towards this object beyond our own Society; and the researches of the Council during the past winter have shown that any removal to more desirable apartments can only be effected at an increased annual expense. We must trust, therefore, to our own exertions; and now that past differences of opinion have subsided, let us hope that our prospects will continue to brighten, and that under the guidance of the able and distinguished geographer whom you have this day elected to fill the chair of the President, the Geographical Society will again increase the number of its members, and extend the sphere of its public utility.

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| ——— Ueber den Flächeninhalt der 37 Westlichen Gouvernements und Provinzen des Europäischen Russlands. Von F. G. W. Struve. 4to. St. Petersburg. 1845 | M. STRUVE. |
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ASIA.

- ASIA.**—Royal Asiatic Society, Journal of the. Vol. 17, Part 2; and Vol. 18, Part 1. 8vo. 1846 } ROYAL ASIATIC SOCIETY.
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- Zeitschrift der Deutschen morgenländischen Gesellschaft herausgegeben von den Geschäftsführern. Heft 1, 8vo. Leipzig. 1846 }
- Jahrsberichte der Deutschen morgenländischen Gesellschaft für 1845—46. 8vo. Leipzig, 1846. }
- ASIA MINOR.**—Astronomische Ortsbestimmungen in der Europäischen Türkei in Kaukasien und Kleinen Asien nach den von den officieren des Kaiserlichen Generalstabes in 1828 bis 1832. Von F. G. W. Struve. 4to. St. Petersburg, 1845. } M. STRUVE.
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AFRICA.

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THE FOLLOWING ERRATA OCCUR IN ART. XVIII., VOL. XVI.

Page.

301, and throughout, *for* Singapúr, *read* Singapore. The ancient and present Malay name is Singapúrá; the English name is Singapore.

,, and throughout, *for* bangala, *read* bungalow.

,, ,, *for* Lagan, *read* Logan.

305, ,, *for* Carabee, *read* Carnbees.

306, ,, *for* Tenjong, *read* Tanjong.

307, ,, *for* putih, *read* putih.

309, *delete* granitic.

,, *for* Tanjong, *read* the Tanjong.

,, *for* distinctly defined, *read* obliterated.

310, *for* inland rivers, *read* inland views.

,, *for* president, *read* resident.

313, *for* Rumbowi, *read* Rumbow.

314, *for* Riman, *read* Rimaú.

,, *for* Lepa, *read* Lépiás.

,, *for* Batu Bayas, *read* Búket Báýás.

,, *for* Batu Bintam, *read* Búket Birtám.

315, and throughout, *for* Wellesley Province, *read* Province Wellesley. The former name has long been in desuetude.

,, *for* Azer Etam, *read* Ayer Etam.

,, *for* Glufor, *read* Glugor.

,, *for* Paxe, *read* Prye.

316, *for* sufficient, *read* deficient.

,, *for* Sange, *read* Súngai.

317, *for* Puz, *read* Prye.

,, *for* Chemkal, *read* Chunkol.

321, *for* Tuwan Allah, *read* Túán Alláh.

,, *for* Mandrah, *read* Manoráh.

327, *for* I had detached masses, *read* I had observed detached masses.

329, *for* I believe this is the first instance of granite rocks near the shore observed so close to the Equinoctial Line, *read* I believe this is the first time grooved rocks have been observed so close upon the Line.

330, *for* elementary, *read* elevatory.

By omitting fig. 1 of the sketches of the Pulo Ubin grooved granite-rocks, the description in the text has been rendered erroneous.

PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY.

I.—*On the Nile and its Tributaries.* By CHARLES T. BEKE, Esq., PH. D., F.S.A., F.R.G.S., Corresponding Member of the Geographical Society of Paris.

NOTWITHSTANDING all that has been effected during the last few years in the way of acquiring a knowledge of the upper basin of the Nile, the position of the source of that celebrated river remains as unknown as it was in the earliest ages: the saying of the ancients, *Nili quærere caput*, continues as applicable at the present day as it was when first used to denote the impracticability of any undertaking.

Still, the want of success which has hitherto attended the attempts to discover the head of the Nile, instead of discouraging, ought rather to incite us to more arduous endeavours. If the birth-place of the giant-stream of Africa has not yet been detected, we are at least in a better condition than ever before to decide where it is *not*. In this, as in most other questions of research, it is by a long and tedious journey round a spiral, with the face never directed in a straight line towards the centre, that that point is at length attained; and it is only by the consciousness, that, as the folds of the spiral become more and more contracted, all that is untrue is left on the outside, that we are encouraged to persevere in our course till at length we reach the goal.

The last few years have been most fruitful in results bearing upon our knowledge of this interesting subject. The expeditions undertaken by command of the Páshá of Egypt on the one hand, and the explorations of the numerous travellers who have entered Africa from the eastern coast on the other, have supplied rich materials for the history of the upper basin of the Nile. We have on many points acquired certainty, where before all was doubt and speculation; and the vantage-ground thus gained affords us a sure and firm footing for the prosecution of further labours.

As an aid towards the solution of this important geographical problem, it is proposed in the present Essay to take a general survey of the numerous streams which unite to form the river of Egypt, so far as our knowledge of them extends. In the performance of this task we shall confine ourselves as much as

possible to the actual results which have been obtained by the various travellers who have visited the countries watered by those streams. That speculation must still, at times, come in aid of facts is unavoidable; but it will be our endeavour to confine this speculation within legitimate bounds, and to limit it, indeed, to the reconciling of seemingly contradictory statements and to the arranging and combining of isolated and unconnected facts, where actual information is still insufficient and unsatisfactory. To say that we shall, on all points, come to definite results, is more than is warranted by the imperfect nature of the premises.

The usual and most methodical mode of describing a river is to commence at its source, and to follow its course down the entire stream, noting its various tributaries as they consecutively join it. This method is, however, forbidden to us in the case of the Nile; for its head is still enveloped in the clouds of mystery which have in all ages concealed it from our sight. The next best method is to reverse the process and to ascend the river, enumerating its various tributaries as they, from time to time, fall into it. When we come to a fork of the principal stream, each arm of the fork must be considered separately, and its affluents noticed in the same manner as in the case of the main stream itself.

It is this latter process which must be adopted with respect to the Nile. And the right or eastern bank of that river being the more accessible, and consequently the better known to us, is naturally first entitled to our consideration.

For a distance of upwards of 1200 geographical miles from the Mediterranean, into which it discharges its waters, this mighty river, the largest in the continent of Africa, and one that is probably unsurpassed in length by any on the entire surface of the globe, is a *single* stream. Fed by the incessant rains of the tropics, which are collected by its innumerable head-streams in the south, it is enabled to contend with the burning sun and the scarcely less burning sands of Nubia and Egypt throughout this great extent of country, without the aid of a single tributary; presenting a phenomenon which finds its parallel in no other river.

In about 18° N. lat., at the northern limit of the tropical rains, the Nile receives on its right bank its first great affluent, the Atbarah—the Astaboras of Ptolemy. This river bears also the name of El Mokádah, as coming from Abessinia,* and at its

* Mokádah, Makádah, or Mekyádeh, is the name by which the entire hill country of Abessinia and the Gállas is known among the inhabitants of the lower districts of Atbarah and Sennár. By the Arabs this country is called *Habesh*. But, in order to prevent misconception, it should be remarked that they apply this name not merely to the *Abessinia* of European geographers and travellers, but generally to the elevated range of table-land of Eastern Africa—the country which, as producing slaves of a character totally different from that of the Negroes, is by the Arab merchants and slave-dealers contradistinguished from the Belád el *Súdán*, or country of the *Blacks*. Thus, the

confluence with the Nile it is called El Mokrán.* It is further designated Bahr el A'swad, or the Black River,† from the quantity of black earth brought down by it during the rains, which is so great as even to affect the general colour of the Nile.‡ In Abessinia it is known as the Tákkazie. In the lower part of its course the bed of the Atbarah is from 400 to 500 paces in width, with but little water except during the rains, it being stagnant and not drinkable for three or four months in the year.§

At about 2 days' journey up its stream the Atbarah receives on its right bank a small tributary, having its rise in the Bisháriyeh mountains towards Suwákin,|| which is nearly dry in the summer, and appears to be nothing but a collection of wádís, or winter-torrents. To this stream Burckhardt attributes the name of Mogren, adding that below its junction with the Atbarah the latter assumes the name of its tributary.¶ Cailliaud asserts, on the contrary,** that the term *Mokrán* (Moqrân) signifies "confluence" or "junction," and that there is no such river as that mentioned by Burckhardt. As, however, the French traveller admits that several *torrents* join the Atbarah, Burckhardt, whose accuracy as a recorder of facts is beyond dispute, must be understood as alluding to one of these torrents, even if it should happen that

slaves called "Hubshee" (Hâbashi) or "Abessinian" in Egypt, Arabia, and India, are not usually natives of *Abessinia*, in the ordinary acceptation of that term, but of the countries S. of the Abáí; and even those who are particularized in Abessinia and Egypt as "Enáreans," come, in many cases, from countries still further to the S. and W., being called by that name because the slave-merchants of Abessinia purchase them in the markets of Enárea. See on this subject the 'Friend of the African,' vol. i. p. 15.

As regards the use of the form "Abessinia" instead of "Abyssinia," it is justly observed by the Rev. C. W. Isenberg, in his 'Abessinien und die evangelische Mission' (12mo., Bonn, 1844), vol. i. p. 1, that "the spelling of the name of this country 'Abyssinia' is etymologically incorrect. For, from the Arabic *حَبَشَة Habesh*, we had first the Latin *Abassia*, from which *Abessinia* or *Abassinia* would naturally be formed, but not *Abyssinia*, which seems to point to the word 'Abyss' as its root, which it is not." This erroneous mode of spelling the name is adopted by Dr. Johnson in his Translation of Father Jerome Lobo's 'Voyage to Abyssinia,' published in 1735; but in his 'Rasselas,' published in 1759, four-and-twenty years later, he has "Abissinia."

* Commonly pronounced Moqrân. Cailliaud, 'Voyage à Meroë et au Fleuve Blanc,' vol. iii. p. 176.

† 'Narrative of the Expedition to Dongola and Sennaar, &c.,' pp. 125, 197.

‡ Linant, in 'Journal of the Royal Geographical Society,' vol. ii. p. 185.

§ Cailliaud, vol. ii. p. 130, sq. Mr. English says ('Narrative, &c.,' p. 197), "I estimated it at about two-thirds of a mile at its embouchure." This was during the rains.

|| Burckhardt, 'Travels in Nubia,' p. 373. [Suwákin, or Sawákin, signifies "Inhabitant."—F. S.]

¶ I believe that our accomplished and worthy Secretary, Colonel Jackson, was the first to direct attention, in his valuable little manual 'What to Observe' (2nd edit. p. 17), to the circumstance of a river, below the confluence of two streams, being regarded by the inhabitants of the opposite banks as the continuation of the one or the other of those streams, as a not unfrequent cause of discrepancy in travellers' accounts of countries little known. The necessity for this caution was never better exemplified than in the case of the Nile and its various tributaries.

** Vol. iii. p. 176.

he is mistaken with respect to its name; since it is clear, from his mention of it on several occasions, and from the fact of his having traced its course upwards nearly as far as Suwákin, that such a water-course actually exists.*

At the same time that Cailliaud denies the existence of the "Mogren," he states † that there is no tributary of the Atbarah except the Sitit, which joins that river 3 degrees (180 miles) above its junction with the Nile. M. Werne, ‡ on his way from Taka to Kóz-Rádjeb, § crossed a large water-course in about this situation, which he calls Khór el Gash, and which, though usually dry, was, at the time when he passed it (in the month of November, 1840), no less than *four thousand feet* in breadth, in consequence of the rains. On looking to the position attributed in our maps to the Máreb, which is made to run towards the Atbarah in about 16° N. lat., but without joining it, we should be led to the conclusion that that river is the upper course of the Sitit, or Khór el Gash. But from the relation of Dr. Petit, || the junction of the Máreb with the Atbarah, or Tákkazie, takes place considerably higher up—in fact, opposite to the province of Walkát, in about 14° N. lat.; so that the Sitit must be a separate stream.

Proceeding up the right bank of the Tákkazie—as, in accordance with the native usage in Abessinia, the Atbarah will henceforward be designated—we next come to the Máreb. This river is generally supposed not to reach the Tákkazie, but to lose itself in the sands of an extensive marshy and woody district, named Bárákwa or "the Desert:" ¶ indeed, Dr. Rüppell goes so far as altogether to deny the existence of the Máreb as a river,** and applies that name, or, as he writes it, "Maleb," to the desert country just alluded to. But this must have arisen from some misunderstanding; since nothing is more certain than that the Máreb is a river, "large, deep, and smooth," †† which has been crossed by myself in common with all other travellers who have passed (which Dr. Rüppell has not) between A'dowa and Seráwe. ‡‡ That this river becomes nearly stagnant in the dry season is, however, not to be denied; §§ and it may even be that at the height of that season its lower course is altogether dried

* Burckhardt was, however, mistaken in supposing the "Mogren" to be the lower course of the Máreb. See his 'Travels,' p. 264. † Vol. iii. p. 177.

‡ In Ritter's 'Blick in das Nil-Quellland,' p. 43; and 'Monatsbericht' of the Geographical Society of Berlin (1845), vol. ii. p. 16.

§ i. e. the moving sand-hill.—F. S.

|| 'Bulletin de la Société de Géographie de Paris,' 3rd Series, vol. iii. p. 37.

¶ See Lefebvre, in 'Bulletin, &c.,' 2nd Series, vol. xiv. p. 130.

** 'Reise in Abyssinien,' vol. ii. p. 301, sq.

†† Bruce, 'Travels to discover the Source of the Nile' (Edit. pr.), vol. iii. p. 115.

‡‡ See 'Journal of R. G. S.,' vol. xiv. p. 64.

§§ Ibid.

up. Still it is most probable that during the rains its waters find their way to the Tákkazie.*

As early as the beginning of the seventeenth century the Portuguese missionaries in Abessinia had laid down the Máreb, in a general way, as rising in the neighbourhood of Dobárwa, in Hámasien, the most north-easterly province of the kingdom of Tigre; and in their maps they plainly showed the remarkable peculiarity which it possesses, in common with many of the rivers of the Abessinian table-land, of returning on itself, so as to perform a sort of spiral course.† In the more recent maps the upper portion of the Máreb has gradually been withdrawn from its true position, till at length even its existence has been disputed. But in the map of MM. Combes and Tamisier ‡ the Máreb, notwithstanding that it is not quite correctly laid down, is restored to its importance as a river, and the general accuracy of the delineation of its upper course by the earlier Portuguese is established.

On its right bank the Máreb is shown in the maps, apparently on the authority of Bruce, as receiving the Lidda, which river has its head in close proximity to that of its recipient, though its course is considerably to the northward of the latter.§ It may be, however, that the Lidda is only the upper course of the Sitit, or Khór el Gash. On its left bank the Máreb is joined by the Angúya, which river has its rise not far from A'degrat, the chief town of Agámie, and is erroneously made by Rüppell to appropriate to itself the honour of being the upper course of the former river.||

As Tigre is that portion of Abessinia which has been the most frequented by Europeans, it would naturally be imagined that its rivers would be well known and their courses accurately ascertained. Yet such is far from being the case. Even the Hássam (not Assa nor Assam), the small stream flowing by A'dowa, a place which has been visited by every traveller in Tigre and where many of them have resided for years, was

* M. d'Abbadie states that the lower portion of the Máreb is called *Gash* (Gach), and that it joins the Atbarah above *Köz-Radjeb*, but apparently only during the rains. See 'Bulletin,' 2nd Series, vol. xviii. p. 205. But if M. Petit is correct in his information, there must be here some confusion of this river with the Sitit of M. Cailliand.
 • M. d'Abbadie further describes a *second* river Máreb, also called A'usaba, as rising like the other near Dobárwa, but running northwards, and discharging itself into the Red Sea near Sawákin.

† This led Vossius to place here the peninsula of Meroë. See Delisle, in 'Mémoires de l'Académie Royale des Sciences,' 1708, p. 368.

‡ 'Voyage en Abyssinie,' 8vo., Paris, 1838. Dr. Rüppell says, however ('Reise, &c.,' vol. ii. p. 301), that this is merely copied from Berghaus's Map of the Nile.

§ Much more precise information respecting all these rivers is requisite, before we can determine their courses satisfactorily.

|| 'Reise in Abyssinien,' vol. ii. p. 301.

always regarded as joining the Máreb (it being so laid down in the maps of Bruce, Salt, and others), till Dr. Rüppell first pointed out that in reality it flows south-westward towards the Tákkazie.* But this state of things is on the eve of terminating. The military survey of the whole of the north of Abessinía lately executed by MM. Galinier and Ferret by order of the French Government, and that made by M. Lefebvre and his colleagues under the same auspices, will, when their results are published (which may shortly be expected), clear up all doubts upon this subject, as likewise on many other points connected with the topography of that country.

Leaving the Máreb, we have now to proceed up the right bank of the Tákkazie. This river is joined by several streams, which bear to it the waters of the north-east of Abessinía, among which are especially to be named the Gebáa (the Gibba of Salt), which divides the district of Sahárte from Témbien, and the Arékwa, which joins the Tákkazie between Témbien and Abargále.

A little to the south of the junction of the Arékwa, the Tákkazie divides into two arms. Of these the eastern one is called the Tselári, while the western one retains the name of the main stream, though in size and in the quantity of water which it carries to the common channel the former river is at least equal to the latter,† and according to Bruce‡ it is the principal branch.

A recent French traveller, M. Even, in his journey through Lásta to Shoa, followed the course of the Tselári from near its junction with the Tákkazie to its source; and in the map of his route recently published§ the name of the latter river is attributed to the former. This I am inclined to regard as an error. As far as my own personal knowledge extends—and I have crossed both rivers—the western or left branch is called the Tákkazie, and the right or eastern one the Tselári. Dr. Krapf also mentions having crossed the *Terāri* (as the name is frequently pronounced) not far from Lake A'shangí;|| but he makes no allusion whatever to the Tákkazie as being in that direction. The Tselári is stated by Bruce¶ to rise in A'ngot, near a spot named Suámi Midre, close to the village Gurri, where it has, he says, three spring-heads or sources like the Abáí. It receives a large proportion of

* 'Reise in Abyssinien,' vol. i. p. xi. *sq.*; and see 'Journal R. G. S.,' vol. xiv. p. 63. In M. Even's Map of Abyssinia, just published in Paris, the old error is repeated.

† 'Journal R. G. S.,' vol. xiv. p. 59.

‡ 'Travels, &c.,' vol. iii. p. 156.

§ 'Carte générale de l'Abyssinie, &c.,' par P. F. Even; Paris, 1846. This map appears to be a copy, not always accurate, from mine in the fourteenth volume of the Society's 'Journal,' on which the traveller's route has been filled in by no very skilful hand.

|| 'Journals of the Rev. Messrs. Isenberg and Krapf,' p. 463.

¶ 'Travels,' vol. iii. p. 156.

the waters of Wáag as far as Wóffa. Its principal tributary on the right bank is the Zámra, which rises in Wódjerat and receives the waters from the southern side of Endérta.* Of this latter river the Tsána crossed by Dr. Krapf† is a tributary. Southward of the Zámra the Tselári is joined by the Sássela, coming from Wóffa,‡ and by the Shémsheho and Gébia, two rivers mentioned by Dr. Krapf as having been crossed by him.§ Of the tributaries of the Tselári on its left bank, I am acquainted only with the Káha, a small stream, which runs to the east of Sókota, the capital of Wáag, and is joined by the Chúa coming further from the east; the Shagálu, a "torrent," which falls into the Tselári much further to the north, and down the dry bed of which I journeyed in the month of April, 1843, on my way from Wáag to Bóra; and the Mai Lómi, the upper portion of which was visited by me before reaching the Shagálu, and which joins the main stream somewhat lower down towards the north-west.

The high land of Lásta, of which Mount Biála forms the northern extremity, divides the head waters of the Tselári from those of the upper Tákkázie.¶ Ascending the right bank of this latter river above the confluence, we meet with the Télla, A'rri, and Mérrí, all having their rise on the western flank of Mount Biála. The source of the Tákkázie itself is in the kingdom of Lásta, and in the neighbourhood of Lalibala, one of the most celebrated places in all Abessinia, and remarkable for its churches hewn out of the living rock. Of these churches a minute description, with plans, is given by Father Francis Alvarez, who visited the spot in the year 1520.¶ In Biégamider I heard, that, shortly before I passed through that country, M. Antoine d'Abbadie had visited Lalibala; but I have not been able, since my return to Europe, to find any record of the fact. Should it be as reported, that traveller will doubtless have it in his power to lay down, with accuracy, the position of the head of the Tákkázie and the direction of its upper course, and thus to clear up the discrepancy between my description of it from information obtained from native sources,** and that given by Mr. Salt†† on the authority of Pearce.

Passing over to the left bank of the Tákkázie and following its course downwards, we shall not pause to consider the various small streams which fall into it from Biégamider and the adjoining districts, but shall proceed at once to the Béllegas, or Shoáda. This river has its rise in the lofty mountains of Sámien,‡‡

* 'Journal R. G. S.,' vol. xiv. p. 59.

† 'Journals,' p. 490.

‡ 'Journal R. G. S.,' vol. xiv. p. 58.

§ 'Journals,' p. 484.

¶ 'Journal R. G. S.,' vol. xiv. p. 58.

¶¶ 'Viaggio nella Ethiopia,' in Ramusio's 'Navigazioni e Viaggi' (Venetia, 1563, Edit. 3^a), vol. i. pp. 210, sqq.

** 'Journal R. G. S.,' vol. xiv. p. 54.

†† 'Voyage to Abyssinia,' p. 277, sq.

‡‡ Ruppell, vol. ii. p. 64, sq.

and taking a spiral course to the S. and E.—in a direction 'contrary to that of most other rivers of Abessinia, which go round to the S. and W.—joins the Tákkazie at some distance to the south of its confluence with the Tselári. Further down are the Angrab and Gwangwe, rivers of some magnitude, having their rise in the province of Démbea, in the vicinity of Lake Tsána. These rivers, the head-streams of which were crossed by Bruce* on his road from Góndar to Sennár, unite with the Tákkazie in the low marshy and woody districts of Waldábba and Walkáit, opposite, as it would seem, to the confluence of the Máreb with the same river.

Below this, we are not acquainted with any tributaries of the Tákkazie or Atbarah on its left bank; and we may therefore take leave of that river, and pursue our original course up the right bank of the Nile.

For upwards of 160 miles from the junction of the Atbarah, the main stream may be ascended without meeting with anything which deserves particular mention, till in lat. $15^{\circ} 37' N.$, at a short distance to the south of the town of Halfáyah, we come to the confluence of the Bahr el Abyad and the Bahr el Azrek—the White and Blue Rivers.

Without pausing here to institute any comparison between these two rivers—a subject which will be more in place in a later portion of this investigation—we shall proceed to ascend the right bank of the Bahr el Azrek. Here we first meet with the Ra'ad (Rahad),† and then the Dender; two rivers having their rise in the high land to the west of the lake of Démbea, and both running from about S.E. to N.W., in courses nearly parallel to the Blue River itself.‡ The source of the Ra'ad is not far from Chélga; and it flows between Kwára and Sennár, forming the boundary between Abessinia and Nubia. In the latter country it is known by the name of Shimfah.§ At its junction with the Bahr el Azrek, the bed of the Ra'ad is from 150 to 200 paces in width, but it is full of water only during the rains: at other times of the year it is in several places almost dry.||

The precise position of the source of the Dender is not known; but this river is said to be of greater length than the Ra'ad.¶ In March, 1841, I crossed the head of a small stream named Gúder, having its rise in Mount Barf, in A'gaumider, in $11^{\circ} 5' N.$ lat. and $36^{\circ} 40' E.$ long., at a short distance westward of the source of the Abái; and I was informed that this stream (the Gúder) falls into the A'sher, which joins the Bahr el Azrek

* 'Travels,' vol. iv. pp. 314, 321, 324.

† Cailliaud, vol. ii. p. 219.

Cailliaud, vol. ii. p. 220.

‡ Ra'ad, i. e. "Thunder."—F. S.

§ Bruce, vol. iv. p. 416.

¶ Ibid.

far to the north.* I look upon it that the A'sher is the same as the Dender, or, at all events, one of its principal tributaries; so that, from the head of the Gúder to the junction of the Dender with the Baħr el Azreḵ, the Dender has a course of at least 250 miles in length. When Bruce crossed this river at the end of April, almost at the close of the dry season, its waters stood in pools; but, from the width of its banks (Cailliaud says about 200 paces), and the great depth of its bed—all of white sand—it would seem that during the rains it contains nearly as much water as the Baħr el Azreḵ.† It is important to bear in mind the length and size thus attributed to the Dender, as they will form material features in the consideration which will shortly be given to the subject of Cailliaud's river "Hessén."‡

Beyond the Dender, and considerably to the south, we come first to the Sodahab, mentioned by Cailliaud§ as being a day's journey to the north of Famaka, a place on the right bank of the Baħr el Azreḵ, opposite to Fázokl; and then to the Gana,§ half-a-day's journey higher up. Both the Sodahab and the Gana are stated to be "torrents," that is to say, streams which cease to run in the dry season. From the position of the Bolássa and Dúrra, two rivers of A'gaumider, which join the Baħr el Azreḵ in the country of the Shánkalas, or Negroes, below Chugháí,|| it would seem that M. Cailliaud's two "torrents" are the lower courses of those streams,¶ which, having their sources in a country of no great elevation, and being not more than 90 miles in length—for the head streams of the Dender cut them off from coming from further east than about 36° 30' E. long.—have not sufficient water to cause them to flow throughout the whole year.

Above these two torrents, Cailliaud places, from hearsay, a river, named *Hessén*, coming from the S.E., and having its confluence with the Baħr el Azreḵ not far from the junction of the Yabús with that river, but on its opposite bank; ** that is to say, in about 10° 40' N. lat., as laid down in that traveller's map. The Hessén is "said to be as large as the Dender."†† Upon this, the question arises where a river of such magnitude can have

* 'Journal R. G. S.,' vol. xiv. p. 10, sq.

† Bruce, vol. iv. p. 419. Cailliaud says (vol. ii. p. 220) that the Dender is never absolutely dry at any time of the year. ‡ Vol. iii. p. 62.

§ Kaná in Arabic means "Red or black water."—F. S.

|| 'Journal R. G. S.,' vol. xiv. pp. 8, 11.

¶ M. d'Abbadie mentions the Gadjúé in Alafa, and the Alatis in Kwára, as coming between the Dender and Bolassa. See 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 111.

** Yebús signifies "dry" in Arabic.—F. S.

†† "Une seconde, que l'on dit être aussi considérable que le Dender, et qui se nomme Hessén, vient du sud-est, et a son embouchure à peu de distance de l'Yaboussa."—'Voyage à Meroe, &c.,' vol. iii. p. 61.

its origin and course. If we consider the position of Mount Giesh, in $10^{\circ} 58' \text{ N. lat.}$ and $36^{\circ} 50' \text{ E. long.}$; on the one side of which rises the Abäi having its course northwards, and on the other side the Fätsam running to the S.—the sources of some of the head-streams of those two rivers being almost contiguous; * it is impossible that any river coming from the S.E., and joining the Baħr el Azreḵ in about the parallel of $11^{\circ} \text{ N. lat.}$, should have a course of 100 miles in length; much less 250 miles, which is the length of the Dender. And if, further, we consider the position of the Zingini, the head of which river is close to that of the Gúder (that is to say, of the upper course of the Dender), and the entire course of which I am acquainted with from personal observation,† we shall perceive that this length of 100 miles must, in fact, be considerably reduced. Where, then, shall we find a place for the *Hessén* of the French traveller—a river “as large as the Dender”?

To enable us to answer this question, we must first discuss another, viz. : whether the Abäi—the “Nile” of the Portuguese and of Bruce—is, in reality, the upper stream of the Baħr el Azreḵ; or whether its sources ought not to be deprived of the honour of being regarded as the fountains of the Blue River, in the same way as they have already lost that of being those of the true Nile.

For the decision of this question, it is necessary to ascertain what is really known to us of the course of the Baħr el Azreḵ above $11^{\circ} 14' \text{ N. lat.}$, where it is joined by the Túmat from the W.;‡ beyond which point, or thereabouts, the personal observation of European travellers ceases. In the first place, M. Cailliaud says,§ that, from repeated inquiries of the natives, he learned that *the Blue River comes from much higher up than Abessinia*, and that it winds for a distance of 30 days' journey round a mountain called Djebel Mehet. He remarks that “it is difficult to draw any reasonable conclusion from information so vague and probably unfounded;”|| and accordingly, in the construction of his map, he would seem to have disregarded it altogether, and to have given the Baħr el Azreḵ the course usually attributed to it; though, by his so doing, the *Hessén*—a river “as large as the Dender”—sinks into an insignificant “torrent.”

In the next place, Mr. English, who was in Sennár at the same

* See ‘Journal R. G. S.’ vol. xiv. p. 12. In the Amharic language the word *Fätsam* signifies “end” or “termination.” As this river actually shuts in the peninsula of Góǵjam, so as to leave a *portage* of barely a couple of miles between its head and that of the Abäi, it may be presumed that the name is significant, and derives its origin from this circumstance.

† See the Map in ‘Journal R. G. S.’ vol. xiv. part i.

‡ Russegger, ‘Reise in Europa, Asien, und Afrika,’ vol. ii. part ii. p. 552.

§ Cailliaud, vol. iii. p. 59.

|| Ibid.

time as Cailliaud, was told by the people of the country, as well as by caravan-merchants, that * "the source of the Adit (so the people of Sennaar call the river that runs by their city), is in the Gibel el Gumara † (i. e. that great range of mountains called the Mountains of the Moon), about sixty days' march of a camel from Sennaar, in a direction nearly south. It receives, at various distances above Sennaar, several smaller rivers which come from Abyssinia and from the mountains south of Sennaar." On a consideration of the whole subject, Mr. English is "disposed to believe that *the main stream of the Adit, or Nile of Bruce, does not take its rise in Abyssinia*, but rather in the mountains assigned as the place of its origin by the people of Sennaar." For, he says, "on viewing the mass of water that runs by Sennaar, even now [between the 7th and 14th of Shawâl=7th and 14th of July, 1821] when the river has not attained two-thirds of the usual magnitude it acquires during the rainy season, I can by no means believe that the main source of such a river is only about 300 miles distant from Sennaar."‡

The evidence of a more recent traveller, M. Russegger, is of even greater weight than that of the two former authorities, inasmuch as he gives us the result of his own personal observations; he having ascended the Baħr el Azrek and its tributary the Túmat much further to the S. than the others, and having likewise gone eastward towards the Yábús, which they did not. The extreme southern limit of M. Russegger's journey was the camp on the Pulkhidia, between the Túmat and Yábús, in 10° 16' 17" N. lat.§ Before leaving this spot, he went a little way westwards to the summit of Mount Gewésh, to observe the surrounding country. "From hence," he says,|| "we had a splendid prospect. . . . Towards the E. we saw some very lofty mountains in the Galla country, on the Yábús and Baħr el Azrek. Of these, Belfudi, Beshori, and Belamili, three mountains in a south-easterly direction *on the right bank of the Baħr el Azrek*, were most remarkable for their height and immense size. On the horizon, peak was seen to rise above peak, and it appeared that in that direction there must exist a connected chain of mountains of considerable extent and importance." This information is too

* 'Narrative, &c.' p. 179.

† He means Djebel el Kámar, i.e. "Mountains of the Moon."—F. S.

‡ 182. These arguments of Mr. English, as cited in Dr. Russell's 'Nubia and Abyssinia,' p. 70, sq., were referred to by me in a letter to the Reverend J. M. Trew (now Archdeacon of the Bahamas), written at Yáush, in Gódjam, on the 6th September, 1842, as confirmatory of the conclusion to which I had at that early period arrived, from independent native evidence, of the existence of a great western branch of the Baħr el Azrek. See page 26, sq. of the present Essay.

§ 'Reise, &c.' vol. ii. part ii., p. 580.

|| Ibid., p. 590.

precise to admit of misconception; and, accordingly, the right or eastern bank of the Bahr el Azrek being shut in by these mountains, the southern course of that river is absolutely determined as far as $9^{\circ} 35'$ N. lat.; as it is laid down, in fact, in M. Russegger's map of East-Sudán accompanying his work.

The course of the Bahr el Azrek being traced thus far to the south, we have next to inquire what are its position and direction higher up the stream. On this point M. Russegger expresses the opinion that "the identity of the Abáí of Abessinia with the Bahr el Azrek cannot be questioned;"* the course of its upper stream between Gódjam and Shoa having, as he says, "been unquestionably established as far southwards as the ninth parallel of north latitude."† And he goes on to say‡ that Bruce's position of the southern curve of the Abáí, in about 10° N. lat., "is decidedly erroneous; this curve lying, according to the reports of the latest travellers in Shoa and his (Russegger's) own observations, much further to the south."

In this remark respecting the position of the southern curve of the Abáí, M. Russegger agrees with Mr. McQueen; who, in his 'Geographical Memoir,' prefixed to the 'Journals of the Rev. Messrs. Isenberg and Krapf,' states§ that "the Nile [Abáí] goes a little farther S., about 20 miles, than it has hitherto been laid down;" in accordance with which opinion he carries the curve of the river as far to the S. as $9^{\circ} 30'$ N. lat.|| No "traveller in Shoa," except myself, has, however, had an opportunity of ascertaining from personal observation the extent southwards of the curve of the Abáí; and as its latitude at several points was determined by me astronomically, I may, without fear of contradiction, assert that the extreme southern limit of that curve, near the ford of Mélka-Kúki, in Líban, in about $37^{\circ} 30'$ E. long., is not more than $9^{\circ} 52'$ N. lat.; while at the ford of Mélka-A'bro, in Shínasha, in about $36^{\circ} 25'$ E. long., the course of the

* 'Reise, &c.,' vol. ii. part ii. p. 73.

† Ibid., p. 73, sq.

‡ Ibid., p. 75.

§ P. [28].

|| See the maps accompanying the work of Messrs. Isenberg and Krapf. The date of these maps is June, 1843. In December following, the map to Major Harris's 'Highlands of Æthiopia,' constructed by Mr. McQueen, brings back the southern curve of the Abáí to its former position. There is also a no less marked variation between the map in Major Harris's work and those in Messrs. Isenberg and Krapf's volume, with respect to the eastern limit of the curve of the same river, which variation is as much as half a degree of longitude.

The delineation of the peninsula of Gódjam in the map in Major Harris's work is strikingly similar to mine in the 14th volume of the 'Journal of the Royal Geographical Society.' This latter was not published till July, 1844; but Mr. McQueen had the use of the original drafts of the eastern portions of it as early as June, 1843 (see 'Friend of the African,' vol. i. p. 27), and doubtless "preserved a copy" of them, in the same way as he says he did of my map of the 6th September, 1842 (see 'Black's Magazine' for June, 1844, vol. lv. p. 739), which reached his hands at the same time.

river advances as far N. as $10^{\circ} 17' N.$ lat. ; its direction, at this latter point, being about west-north-west. Now, it is *physically impossible for a river in this position and with this course, to be the upper portion of the Baħr el Azrek, which was traced by Russegger as far southwards as $9^{\circ} 35' N.$ lat., and there found to come from still further south.** Consequently, that traveller is in error in his identification of the Abāi with the upper course of the Baħr el Azrek, or Blue River, as laid down by him ; and Messrs. Cailliaud and Inglis were correctly informed that the latter river has its rise in the Galla country to the S. of Abessinia.

It will, by and by, be shown that it is the *Dedhësa* which is the direct stream of the Baħr el Azrek ; † but the system of investigation adopted in the present Essay requires that we should, for the present, confine ourselves to the Abāi. From what has been already advanced, we cannot come to any other conclusion than that this river is merely *a tributary* of the Baħr el Azrek ; and thus we can readily understand, that, when M. Cailliaud's native informants in Sennār described to him the Hessënn, a river "as large as the Dender," joining the Baħr el Azrek from the south-east, they meant no other than the Abāi. In further corroboration of this conclusion, we find in M. Russegger's map a dotted line, which is evidently intended to represent the course of a considerable stream, joining the Baħr el Azrek on its right bank, in about $11^{\circ} N.$ lat. ; and if the line of the Abāi, as determined by myself, be continued from my extreme point at Mëlka-A'bro, in Shínasha, in the direction of about W.N.W., it will be found to meet the Baħr el Azrek just at the place so marked in Russegger's map as the point of junction with a tributary.

Regarding it, then, as an established fact, that the Abāi is not the direct upper course of the Baħr el Azrek, but a tributary of that river and identical with the Hessënn of Cailliaud, our next task is to proceed upwards along its right bank. The spiral course of the Abāi round the peninsula of Gódjam is too well known to require more than an allusion to it. All round this curve the river is joined by numerous streams, having their sources in the mountain-chain which forms the core of the peninsula, and to which, in the absence of any generic native name, may be attributed the appellation of Tálba-Wáha, ‡ such being the designation of the most elevated and best known portion of the entire range. § It is not necessary here to particularize these tributary streams, all

* On the 18th December, 1843, I placed in the hands of Col. Jackson, the Secretary of the Royal Geographical Society, a sketch showing the non-identity of the Abāi with the Baħr el Azrek of M. Russegger's map. † See page 26, *sqq.*

‡ In Amharic means "flax river"—also "linseed-tea!"

§ 'Journal R. G. S.,' vol. xiv. pp. 1, 29, 30, 43.

of which are shown in the map contained in Vol. XIV. of the Society's 'Journal.'*

Neither is it within the scope of the present Essay to give any description of the source of the Abáí, a spot which Bruce has rendered so famous. But, while alluding to the subject, it would ill become me to pass it over without bearing testimony to the minutely accurate description of this spot first given by Father Peter Paez, who visited it in the beginning of the seventeenth century.† The attempt made by our countryman‡ to deprive Paez of the merit of having anticipated him in the discovery and description of the source of the Abáí, or supposed Nile, must ever

* Bruce (vol. iii. p. 257) thus defines the position of the province of Damot:—"On the south-east of the kingdom of Gojam is Damot. It is bounded by the Temci on the east, by the Gult on the west, by the Nile [Abáí] on the south, and by the high mountains of Amid Amid on the north. It is about 40 miles in length from north to south, and something more than 20 in breadth from east to west." And accordingly that province is laid down in his map as being situate in the south-eastern corner of the peninsula of Gódjam. On my own entrance, however, into the peninsula from the east, towards the end of the year 1841, I found the province of Gódjam Proper to occupy the precise situation attributed by Bruce to Dámot; and on my further journey into Dámot and A'gaumider in the beginning of 1842, I found the true position of Dámot to be altogether to the west of Gódjam Proper, extending at least 60 or 80 miles from east to west, and lying to the south and south-west of the source of the Abáí, i. e. beyond it.

With regard to the rivers "Temci" and "Gult," mentioned by Bruce as being the boundaries of Dámot on the east and west, I must remark that during a residence of fifteen months in the peninsula of Gódjam, and repeated journeys through it in various directions, I could neither find nor hear of any rivers of those names either in or adjoining to Dámot or Gódjam Proper, though I frequently inquired after them, they being laid down, from Bruce, in Arrowsmith's map, which I had with me. But in the north-east of the peninsula—Dámot being in the south-west—between the districts of Enássié and Móta, I met with the Tâmmie ('Journal R. G. S.,' vol. xiv. p. 28),—evidently the Temee of the Portuguese Jesuits, for which I imagine Bruce's Temci is intended; and close to it I also found the Gult, which is the upper course of the Tádjatiel, a tributary of the Tâmmie (Ibid., p. 44).

As Dámot is situate altogether to the south and south-west of the source of the Abáí, that is to say, beyond it, it is manifest that Lobo, in proceeding to Lidja-Negús (Liginous = Lidja-Nehús) in Dámot, whither he was sent to establish one of the religious houses of his Order, must have passed by, or very near to, the source. Another of the residences of the Jesuits was at Temhuá (Tummahá) in A'gaumider, at a distance of less than thirty miles beyond the source of the Abáí (see 'Journal R. G. S.,' vol. xiv. p. 7); and one was also at Nefassá, only a league and half to the west of the upper course of that river, between its head and Lake Tsána. (See 'Archæologia,' vol. xxxii. p. 42, sqq.) It is therefore quite a fallacy to suppose that the Jesuits in Abessinia had any difficulty in visiting the source whenever they may have thought proper to do so.

Such being the case, and the positions of Temhuá and Nefassá being laid down in Tellez's map with tolerable accuracy, Bruce cannot well be freed from the suspicion of having intentionally misplaced Dámot.

Other residences of the Jesuits within the peninsula of Gódjam were at Kóllella, Hádashá, Sérka, and Mártula Máriam. At this latter place a splendid church was begun to be erected by Father Bruno Bruui in 1627, but was left unfinished in 1633, when he and the other members of his Order were compelled to quit Gódjam. A brief account of the ruins of this church is given in 'Journal R. G. S.,' vol. xiv. p. 26, sq., and a detailed description, with plates, will be found in 'Archæologia,' vol. xxxii. p. 38, sqq.

† See Kircher's 'Œdipus Ægyptiacus,' Syntagma I., cap. vii. p. 57, sqq.

‡ 'Travels,' vol. iii. p. 615, sqq.

remain a sad blot on the fame to which he had sufficient legitimate claims, without seeking to appropriate to himself what justly belonged to others.* It is not my intention here to enter into any details on this unpleasant subject, especially as I have felt it my duty, as the first traveller possessing from personal observation the means of fully estimating the relative value of Bruce's statements and those of Paez, to record the result of my investigations in a communication which I am about to make to the Geographical Society of Paris.†

Leaving the source of the Abáí and proceeding down its left bank, we come to Lake Tsána, also called the Lake of Démbea, through the southern extremity of which the river passes, its current being distinctly visible across the waters of the lake. About fifteen miles lower down we reach the A'lata, a small stream inconsiderable in itself, but entitled to particular mention on account of its proximity to the cataract of *Tís Esát*, or "The Smoke of Fire,"‡ which Europeans, from Father Jerome Lobo's downwards, have called the "Cataract of A'lata," after its name.

The first river of magnitude falling into the Abáí on its left bank is the Báshilo, the recipient of the waters of the province of Ambára, and as such well known to us from the writings and maps of the Portuguese. Its source is at the northern foot of Mount Sagarat,|| at the extreme eastern edge of the table-land, and not far from the sources of the Bérkona and Mílli, two tributaries of the Hawásh.¶ Next in order is the Wálaka (or Shónkora?) of smaller size, which has its course through the district of that name, now inhabited by sub-tribes of the Túloma Gallas; and further to the south is the Djámma, one of the largest tributaries of the Abáí, which receives through it the waters of the whole of Shoa, Márrabíete, Mans, and Tégulet, as far as the western flank

* Bruce's dishonesty, which a reference to Kircher's 'Œdipus,' a book which he probably never saw, could not but immediately detect, was completely exposed as early as 1796 by Professor Hartmann, in his 'Edrisii Africa,' p. 13, sqq.—F. S.

† My two visits to the source of the Abáí are described in 'Journal R. G. S.,' vol. xiv. pp. 12 and 31. M. Arnauld d'Abbadie and Mr. Bell had both been there before me; and the latter has given a short account of his visit in 'Miscellanea Egyptiaca' (4to. Alexandria, 1842), vol. i. part i. p. 22. M. Antoine d'Abbadie has since been there, and his visit is recorded in the 'Bulletin' of the Geographical Society of Paris, 3rd Series, vol. iii. p. 346, sqq.; and 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 221, sqq. His remarks on my description of the source are commented on by me in the latter work, 1846, vol. iii. p. 223, sqq.

‡ A description of this cataract and of the bridge near it, is given in 'Journal R. G. S.,' vol. xiv. p. 48, sq.

§ Bruce (vol. iii. p. 425, sqq.) is not less unjust to Lobo with reference to this cataract, than he is to Paez in respect of the source of the Abáí; as will be shown in my communication to the Geographical Society of Paris, above alluded to.

|| 'Journals of Messrs. Isenberg and Krapf,' p. 419, sq.

¶ For proofs that the Mílli (the Melee of the Maps) is a tributary of the Hawásh, see 'Journal R. G. S.,' vol. xiv. p. 72; and Johnston's 'Travels in Southern Abyssinia,' vol. i. p. 197.

of the mountains of I'fat (or E'fat). This river, like the Bâshilo, was first made known to us by the Portuguese. From the Itinerary of MM. Combes and Tamisier,* which is very incorrectly represented in the map accompanying their 'Travels,' and from that of Dr. Krapf,† which is scarcely less accurately laid down in the map illustrating his 'Journals,' we are made acquainted with the numerous tributaries which unite to form this river, the main stream of which has been traced by myself throughout the greater portion of its course.‡ Of these tributaries the principal one is the Wánchez—the Anacheta of the Portuguese—which, like the Djámma itself, was crossed by Alvarez in 1520 on his way to Shoa.§

To the south again of the Djámma is the Múger, or Mógur, which river rises in the lofty mountains of Salála, on the opposite flank of which are some of the sources of the Hawásh. In the lower part of its course the Múger forms the boundary between the Túloma and the Kúttāi Gallas.¶ Where it joins the Abáï, the latter river has already quitted its southward course, and has taken a direction westwards along the south of the peninsula of Gódjam, separating it from the table-land now inhabited by Galla tribes, but which, as is shown in the maps of the Portuguese, was formerly the country of the Gáfats, of Dámot, and of Bizámo. In consequence, however, of the irruption of the Gallas and their occupation of the districts to the south of the Abáï, the inhabitants of Gáfat and of Dámot were driven across that river into Gódjam, where they have perpetuated their names and languages.¶¶

Of the various streams which flow into the Abáï along the southern part of its course to the south of Gódjam, it may be sufficient to mention the Gúder, which forms the boundary between the Gallas of Kúttāi and Líban to the E. and those of Gúderu to the W.; the Fincháwa, or Agúl, between Gúderu and Hóro; and the Dibúk and Aléltu in the country of A'muru.**

M. d'Abbadie further names the "*Wálmál* (Ouelmâl) of Limmu," as a tributary of the Abáï††; the mention of which stream calls for some special observations with respect to a certain river

* 'Voyage en Abyssinie,' vol. i. pp 167—346, *passim*.

† 'Journals of Rev. Messrs. Isenberg and Krapf,' pp. 277—315, *passim*.

‡ 'Journal R. G. S.,' vol. xii. p. 247, *sqq.*

§ In M. Even's Map the Wánchez is altogether omitted.

¶ 'Journal R. G. S.,' vol. xiv. p. 23. M. d'Abbadie says, in a letter from Gódjam, dated April, 1844 ('Nouvelles Annales des Voyages,' 1845, vol. ii. p. 112), that "the Mogar has its source in Limmu, and separates Chélea from Hébantú;" but this is a mistake, unless he speaks of some other river of the same name with which I am unacquainted.

¶¶ See 'Proceedings of the Philological Society,' vol. ii. p. 93.

** These rivers are all laid down in the map in the 14th volume of the Society's 'Journal.' †† 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 112.

“Habáhia,” which has of late years found a place in our maps. The first mention of the Habáhia was made by M. Jomard in his very interesting ‘Notice sur les Gallas de Limmou,’ contained in the ‘Bulletin de la Société de Géographie de Paris,’* which Memoir was drawn up from information obtained from a young Galla lad named Wáre (Ouarè), a native of Sóbiche in Limmu. Wáre expressly stated that his country, Limmu, was situate on the banks of a large river named Habáhia, having among its tributaries the *Wálmá* (“Wouelma”), or, as it is written in the map accompanying the memoir, “Ouelmâl,” i. e. *Wálmál*. From the great distance said to have been travelled by the young Galla from Sóbiche to the ford of the Abáï (Méika-Fúri) between Gúderu and Báso; from the enumeration of the various districts lying along and on each side of his route; from his express statement that *the Habáhia runs from N. to S.*; and from the various other particulars furnished by him to M. Jomard, the latter was no doubt justified in regarding the “Habáhia” not merely as differing from the Abáï of Abessinia, but as belonging to a distinct hydrographical basin; as being, in fact, the head of one of the streams flowing into the Indian Ocean.

It was not long before this hypothesis was adopted by other writers on geography. The first of these was Mr. McQueen, who, in his ‘Geographical Survey of Africa,’† enters into a detail of arguments intended to prove that the Limmu of Wáre should be placed upwards of a degree to the S. of the position attributed to it by M. Jomard, and nearly 2 degrees further to the W. Of course, the position of the “Habáhia” would have to follow that of Limmu; and, accordingly, that river is laid down in the map accompanying Mr. McQueen’s work, as rising in about 7° 10’ N. lat. and 32° 30’ E. long., and as being the upper course of the “Kilimaney,”‡ which river is shown in the same map as discharging itself into the Indian Ocean in about lat. 3° S.§

* 2nd Series, vol. xii. p. 5, sqq.

† P. 251, sqq.

‡ So the name is written in the map; but in the body of the work it is “Quilimancy.” The author says, “Proceeding southward from Jubah, we find, betwixt the parallels of 2° to 3½° S., that is, between Malemba [Melindah] and Patta, a large delta thickly intersected by streams, the estuaries of a large river, which, according to the authority of the Portuguese, is searched out by that excellent geographer D’Anville, at the mouths of the great river Quilimancy.”—‘Geogr. Surv. of Africa,’ p. 250.

It may be proper to observe, that in d’Anville’s Map of Africa, published in 1749, it is stated respecting the Zeebe, that “the course of this river is unknown, and it cannot be determined whether it is the Quilimanci or the river of Paté.”

§ Mr. Arc Angelo, who in February 1844 ascended the Jubb or Gowin (the pseudo-Gódjeb or “Gochob,” see p. 45, sq.) says:—“The island of Patte is in about 1° 50’ S.; Melinda is in about 3° S. Between these latitudes, that is, in about lat. 2° 44’ S., is the river Ozy or Ouzay, navigated by small craft chiefly. . . . The river Ozy is of great extent, but has very little water at the entrance. . . . This river is not known to the natives or people on the coast as the ‘Quilmaney.’ . . . The correct latitude of the river Ozy will be found in Capt. Owen’s charts.”—‘United Service Journal,’ 1845, part i. p. 127, sq.

Mr. Arc Angelo further remarks: “The only river of Eastern Africa up which the

This view of the course of the "Habáhia" has been likewise adopted, with some slight modifications, by Lieut. Zimmermann and Professor Ritter; the former of whom, in his map annexed to the latter's 'Blick in das Nil-Quellland,' makes that river to be one of the head-streams of the "Goschop," that is to say, the *Gódjeb*, which river, under the name of "Gochob," and as the supposed upper course of the Jubb or Gowín [*i. e.* the Wábbi-Giwéyna], has of late attracted so much notice.*

The "Habáhia" has, however, since assumed another position. According to M. Russegger,† this river is made by Professor Berghaus, in his 'Grundrisse der Geographie,'‡ to be the upper

Portuguese have penetrated, is the Quilmaney, a branch of the Zambéze, situated in lat. 18° S.—18° of latitude only—from the Juba or 'Gochob,' besides longitude."—*Ibid.*, p. 127. In Mr. Cooley's map in vol. xv. of 'Journal R. G. S.,' the river is called the Cuama, and Quilmane is a town at its mouth, in about the latitude stated by Mr. Arc Angelo. Mr. Salt, in the map at p. 12 of his 'Voyage to Abyssinia,' lays down the town of Quilmane on the Zambeze in the same position; but in p. 66, he speaks of 'the port of Quilmaney, at the mouth of the river Zambezi.'

[When this Paper was read before the Society, on the 28th December, 1846, Mr. McQueen stated that, in his opinion, the Kilimancy and the Kilimane are two distinct rivers. This notion is to be thus accounted for. When lake Tsána was carried away to the south by the early geographers, and was made to take the place of lake Zambéze (as will be shown in page 73), it was quite natural that the Wábbi, a river running at no great distance to the south of the former lake, should have been conjectured to be the head of the Kilimáne, which was well known to enter the Indian Ocean in a parallel of latitude not far south of the latter lake. But the connexion between the two rivers being purely imaginary, it ought of course to have been severed as soon as lake Tsána was restored to its place, and the true position of the Wábbi was found to be to the north of the Equator. Instead of which, the Kilimane, under the name of Quilmaney, was made to accompany the Wábbi northwards, and to enter the ocean near Melindah, in about 3° S. lat.; the Zebeé being made by Delisle to supersede the Wábbi as the upper course of that river. The true position of the river Kilimáne (Quilmane), Zambéze, or Cuáma, having since been positively determined to be in 18° S. lat., the hypothetical "Quilmaney" in 3° S. lat., would unquestionably have been abandoned long ago, were it not for Bruce's statement (vol. ii. p. 318) that "the Zebeé is universally allowed by the merchants of this country [Abyssinia] to be the head of the Quilmaney, which passing through such a tract of land from Narea [Enarea] to near Melinda, must have opened a very considerable communication with the inland country." As, however, the connexion between the Zebeé and the Kilimáne is one not of fact, but of hypothesis on the part of the geographers of Europe, it is manifest that the idea of such a connexion would never have been entertained by the merchants of Abyssinia, who could not well possess any knowledge of a river which runs at a distance of 30 degrees of latitude (1800 miles) away from their country. And the truth is, that when Bruce was in Abyssinia, his own opinion, derived no doubt from native sources, was, as the fact really is, that the Zebeé joins the Nile (See page 60, sq. of this Essay); and it was only after his return home that he adopted the error of the early Portuguese, as modified by Delisle.]

With reference to the spelling "Quilmaney" for "Quilmane," I cannot do better than cite the following remarks of Mr. Cooley:—"The disfigurement of proper names in the Decades of de Barros and his continuators is so frequent and manifest, that no critical student can allow their text to be conclusive authority with respect to names. We find in their pages 'Aghirimba' for 'Agizimba'; 'Zuuama' for 'Cuama'; 'Suabo' for 'Cuavo.' These errors, with hundreds more, have been copied with thoughtless servility."—'Journal R. G. S.,' vol. xv. p. 186. The only mis-spelled names which have to be noticed by me are 'Quilmauce' for 'Quilmane' (Kilimáne), 'Toavy' for 'Tacuy' (Takui), 'Zembere' for 'Zambéze,' and 'Abanhi' for 'Abahui' or 'Abái.'

* See page 43, sqq.

† 'Reise, &c.,' vol. ii. part ii. p. 98.

‡ Breslau, 1841, p. 286.

course of the Bahr el Abyad, or true Nile; which opinion has been adopted by M. Russegger himself, and likewise by Mr. McQueen in his more recent maps in Major Harris's 'Highlands of Æthiopia' and 'Blackwood's Magazine' for June, 1844.

In the first of these maps Límму and Sóbiche were made to retain their relative positions with regard to the "Habáhia;" which, seeing that it was from a native of Límму alone that we derived what knowledge we were supposed to possess of that river and the neighbouring countries, was only consistent and reasonable. But in the latest of them Sóbiche is removed altogether away from the "Habáhia," and is placed to the N. of the "Gochob," while Wáre's country, Límму, is made to extend as far northwards as Enárea; and in the remarks which accompany this latest map it is stated,* that "Enárea and Límму are the same." It is added, "There is another Límму . . . near or the same as Sibou, which, according to Bruce, is ten days' journey from the capital of Enarea, and, according to the French Geographical Bulletin (No. 114), not far from Horro and Fazoglo. *But the first Límму is the Límму of Jomard's Galla Oware*, because he states distinctly that Sobitche was its capital; that, in marching northwards from it, he crossed the Wouelmae river; and that Gingiro, *to which he had been*, lay to the right, or east, of his early route; and further that the river which passed near Sobitche ran to the south."†

To these assertions and arguments, however positively advanced, I reply that nothing is more certain than that Wáre's country is not "the first Límму," namely, "the same as Enárea," but is the "Límму near Sibou," and "not far from Horro and Fazoglo" (Fazókl). For the young Límму Galla, Amóchi, whom M. d'Abbadie brought to Europe, was indisputably a native of *Enárea*, and his country was *not* the Límму of Wáre.‡

Secondly, as regards Wáre's alleged personal knowledge of "Gingiro" *from having been there*, all that M. Jomard says is, that "*Ouarè a aussi connaissance du Djendjiro qu'on suppose sous le 7^e parallèle et sous le 34^e méridien, peut-être trop à l'O. Djendjiro restait à sa droite. Il est regrettable que Ouarè n'ait pas de plus amples notions de ce pays intéressant, appelé tantôt Djendjiro (ou Gengiro) et tantôt Zendero.*"§ *Il passe pour renfermer des*

* 'Blackwood's Magazine,' vol. lv. p. 733.

† Ibid.

‡ See 'Bulletin,' 2nd Series, vol. xii. p. 188. M. d'Abbadie at first doubted the existence of two Límmus (ibid., vol. xiv. p. 240), as originally maintained by M. Jomard (ibid., vol. xii. p. 17); but he subsequently admitted the correctness of the opinion of his learned countryman (ibid., vol. xix. p. 438).

§ The native name is Yángar, or Yángaro. By the Gallas it is called Djándjaro, the Gingiro of the Portuguese. This name the Abessinians change, by way of ridicule, into Zindjero, which word means "monkey" in Amharic. The people of Tígre, who have a difficulty in pronouncing the *dj*, which sound does not exist in their language, change the Galla name into Zéndero.

mines."* This last is manifestly an observation, not of Wáre, but of M. Jomard, with reference to the "*mines d'or de Bosham dans le Djendjaro*," which are more particularly noticed in the next page of the Memoir. Mr. McQueen appears, however, to understand this observation as coming from Wáre himself, and the words "*il passe pour renfermer des mines*," as meaning "he had been sent there to stop some mines;"† and understanding it so, it is not altogether unintelligible that he should entertain the opinion that Wáre had been to a country of which, according to M. Jomard's explicit statement, he knew nothing except its name, and that it lay to the right of his route—particulars which Wáre might easily have picked up, and, no doubt, did pick up, from some companion in captivity from Djándjaro, that country being one of those whence Abessinian slave-dealers obtain their supplies.

And, not to allow any point to remain unnoticed, I must add that to draw a conclusion from the positions of Sóbiche and the river Walmá, or Walmál, when these positions depend upon those of Límму and the "*Habáhia*," is merely arguing in a circle; and scarcely even that, since, in his last map, Mr. McQueen has severed the connexion between Límму and the "*Habáhia*," which connexion was the very foundation of his whole argument. As, however, M. d'Abbadie states the "*Ouelmál of Límму*" to be a tributary of the *Abáí*, even this argument tells against, instead of for, the position which it was intended to prove.

The fact really is, that the idea of the separate existence of the "*Habáhia*" has arisen altogether from a misconception, as can be demonstrated with ease. Wáre states his native country, Límму, to be on the banks of the *Habáhia*, in the vicinity of the districts of Wámber, *Síbu*, and *Léka*, and near to the desert country of A'ndak.‡ Further, from the circumstance that in one of his war-songs Límму is coupled with Hébantu (*Ebantou*),§ it is evident that those two districts are inhabited by neighbouring tribes. Now, in the memoir '*On the Countries south of Abyssinia*,' contained in vol. XIII. of the '*Journal of the Royal Geographical Society*,'|| and the accompanying map, the situations of Wámbera, *Síbu*, *Léka*, *Hándak*, and Hébantu are all correctly determined and laid down by me—the last district, indeed, from ocular observation.¶ Consequently, the position of Wáre's country,

* '*Bulletin*,' p. 10.

† "*Gingiro* he knew, as he had been sent there to stop some mines. It lay to the right of his early route, that is, to the east of Limmou."—'*Geographical Survey of Africa*,' p. 252.

‡ '*Bulletin*,' p. 8, sq.

§ *Ibid.* p. 25. "Hebo, hebo, lola!
Hébantu-no lola.
Límму mal'éga?"

"My lance, my lance! to battle, ho!
Hébantu has met the foe.
Why does Límму tarry so?"

|| P. 256. See also the '*Friend of the African*,' vol. i. p. 119.

¶ If further identification were necessary, we might adduce Wáre's "*Dinigas*" (p. 8),

Límmu, called Límmu-Sóbo* to distinguish it from the Límmu of Enárea, cannot possibly be doubtful. It is true that in that memoir the Habáhia of Wáre is considered to be the Dedhé-a, and not the Abáï;† and I should still be inclined to maintain this opinion,‡ were it not that M. d'Abbadie expressly asserts that the "Ouelmâl of Límmu" is a tributary of the Abáï, adding that that river is called Abbaya (Habáhia) by the Góngas§ — the very people whose former country is now occupied by the Galla tribes of A'muru, Hébantu, Límmu, &c., to which Wáre belonged. The only conclusion to be formed from the foregoing evidence, therefore, is that *the "Habáhia" is the Abáï of Abessinia*, Wáre being in error as to the direction of its course, than which nothing is more natural for a person of his limited means of information.

I may almost seem to have entered more into detail than was necessary on the subject of the "Habáhia;" but since this imaginary river has been adopted by so many writers of authority as the head either of the "Goschop" or of the Bañr el Abyad, I am satisfied that good service will have been done to geography, by the pains thus taken to expunge from our maps all traces of a river, which has in truth no real existence.||

Before terminating our investigation of the tributaries of the Abáï on its left bank, we have yet to notice a river which holds a

as being the Dinkas, or Donkas (Dongas) inhabiting the country between the White and Blue Rivers.

* Have the names Sobo and Sobiche any connexion?

† P. 256.

‡ In Shínasha I was told that the Dedhésa also bears the name of Abáï; and I find among my MS. notes a memorandum of a river *Walmâl*, said to run far to the west beyond Límmu; which would make it to be a tributary of the former river, and not of the latter. But the question is not very material, as in either case the position of Límmu, in the fork between the Dedhésa and Abáï, remains the same. From the camp at Mábil, in Shínasha, I saw, just on the horizon, the peak of a high mountain in Hébantu, bearing S. 35° W. This, from its position, would seem to be, if not one of the peaks seen by M. Russegger from Mount Gewésh, at least a portion of the same lofty mountains observed by that traveller on the right bank of the Bañr el Azrek, or Dedhésa. From the same spot Límmu-Sobo was said to bear S. 55° W., beyond but adjoining to Hébantu, and consequently more towards the valley of the river.

§ "Le Abbay, dit fleuve Bleu en aval de sa jonction avec le Didesa, est appelé Abbaya par les Galla et Gongga, Abbawi par les Agaw."—*Nouvelles Annales des Voyages*, 1845, vol. ii. p. 111. "Abbay est une abréviation du Abbaya de la langue Gongga."—*Bulletin*, 3rd Series, vol. iii. p. 316.

|| Mr. Johnston, in his 'Travels in Southern Abyssinia,' vol. ii. p. 124, states that "there is a large river, of which every Galla speaks who comes from Limmo, Jimma, and other districts in that [?] neighbourhood; and which flows south, say Mr. McQueen and Major Harris, whilst Dr. Beke denied its existence altogether, until his (Mr. J.'s) view were laid before the Geographical Society." If, by this "large river," Mr. Johnston alludes to the "Habáhia," I of course continue to deny its existence, for the reasons above stated. Or if by it that gentleman means an hypothetical river, having the Gibbe and Gódjeb for its head and the Dedhésa for its tail, as is shown in the Map accompanying his work, this is simply a reproduction of one of the main features of my Map of the 6th September, 1842, which further research has shown me reason to abandon.

* See, on the subject of this map, page 27, sq. of the present Essay.

The large river beyond Límmu (Enárea) and Djimma-Káka is the Gódjeb, which has no connexion whatever with the river beyond Límmu-Sóbo, namely, the Dedhésa.

prominent place in the maps of the Portuguese. I allude to the Malég, which is stated by Tellez* to have been crossed by Father Antony Fernandes on his journey to Enárea in 1613. To this brief notice of it our knowledge of the Malég is limited, except that in the maps of the Jesuits it is shown to be joined on its right bank by a river, apparently of some size, named the Anquer, i. e. A'nker.† It is important that we should endeavour to ascertain what this river Malég really is, and how far we are warranted in retaining it in its present position in our maps; and for this purpose it is necessary to consider the original description given by Tellez of Fernandes's journey, which appears to have been hitherto strangely misunderstood.

We are told‡ that, departing on the 15th of April, 1613, from Wambárrema (Ombrama), where the viceroy, Ras Sela Kristos, was encamped, Fernandes and his party travelled westwards for 2 or 3 days, through the country of the Gongas, to Shínasha (Sinassé), the principal place of that people.§ Here they had some difficulty in procuring an escort; and when at length they did obtain one, instead of being conducted southwards so as directly to reach the Abáí, they were taken 3 days' journey further west to a place called Minà, at the turn which that river makes northward towards Egypt, and in a line almost due W. from its source.¶ The Abáí, which was here large and difficult to pass, was crossed with the help of rafts and men supported by gourds swimming before and behind. *On the following day* they entered the country of the "Cafres" subject to the Emperor of Abessinia. By these are evidently meant the negroes, or Shánkalias, inhabiting the valley of the Abáí below A'gaumider,¶¶ whom Ras Sela Kristos had only that year rendered tributary.** *On the same day* the guide whom they had procured from Enárea to take them by a circuitous route ("per caminhos desviados"), in order that they might not fall into the hands of the marauding Shánkalias, led them through the midst of a thick wood, very difficult to pass; whence, by a steep descent, they came to the Malég, a large river, *which they reached at night-fall. The next morning* they crossed the Malég at a ford; and when they had reached the opposite side, being no longer in danger from the Shánkalias, they went on more tranquilly, and soon ("logo," which

* 'Historia de Ethiopia a Alta,' p. 314.

† In the more modern maps the name is erroneously written Anquet.

‡ Tellez, p. 313, sq.

§ Thus far westwards the road appears to be much the same as that taken by myself in 1842. See 'Journal R. G. S.,' vol. xiv. p. 37, sq.

¶ "Em tres dias chegaram a o lugar, aonde haviam de passar o Nilo, o qual se chama Minà, e he ja na volta que elle faz pera o Norte, e pera o Egypto, quasi na frente de Leste a Oeste de sua fonte."—Tellez, p. 314.

¶¶ 'Journal R. G. S.,' vol. xiv. p. 9.

** See Paetz, in Kircher's 'Œdipus Ægyptiacus,' Syntagma I., cap. vii. p. 59.

may indeed mean "*immediately*") entered Enárea and began ascending a steep mountain to Gónea. Here they were received by the principal chief of that kingdom, and from hence, in 6 days, going always to the S., they reached the court of the king of Enárea, tributary to the Emperor of Abessinia.

Bruce gives* an abstract of Tellez's text as regards Fernandes's route, adding, "The road and the places through which you pass are very distinctly set down in my map, and, I believe, without material error; it is the only place where the reader will find this route, which, till now, has never been published." Nevertheless, that traveller appears to have much misunderstood the subject; for he says that Minà is the "*ordinary passage* into Bizámo on the way to Enárea;"† whereas Fernandes states that he did not go by the ordinary way, but was taken three days' journey further west into the country of the Shánkawas, and that then he had to go "*per caminhos desviados*." Further, in his map Bruce places Gónea nearly 150 miles to the S. of Minà, and, consequently, almost at the end of the journey to Enárea. Fernandes's account shows, on the contrary, that it was just at the beginning, and that from thence he travelled southwards for six days before reaching the court.‡ The Malég itself, which by Bruce is made to take the place of the A'uker (Anquer) of the Jesuits' map, is placed by him at a distance of 50 miles from Minà; while their Malég becomes his Bañr el Abyad, and Shinasha (Sinassé) is shown by him as being as much as 60 miles from Minà, and only 20 from Wambárrema (Ombrama).

The view which I take of the subject is altogether different. Fernandes, when he arrived at Shinasha, in the valley of the Abái and close to the river, intended to cross there, that being the direct road to Enárea.§ But the Góngas would not, or perhaps could not, let him pass in that direction, so that he had to proceed much further—"three days' journey"—westwards to the country of the Shánkawas. Here he crossed the Abái, just above the point where it is joined, on the opposite bank, by the Malég; and when on that opposite bank, being still within the deep valley of the Abái, he had next to cross the neck of high land running out between the two rivers. This was done by ascending through the forest which lines the bank of the Abái, and

* 'Travels,' vol. ii. p. 310, *sqq.*

† In my Itinerary in 'Journal R. G. S.,' vol. xiv. p. 39, I have erred in stating that the road by which I descended to the Abái in Shinasha was the one taken by Fernandes: I had not then seen the original work of Tellez.

‡ "*De Gónea foram o Embaixador, e o Padre á corte do Beneró, que assim se chamava o Xumo, ou Governador de Nareá, e chegaram lá em seis dias, hindo os primeyros por terras quasi despovoadas por terem dado nellas os Gallas poucos dias d'antes, os mays dias por terras boas, bem cultivadas, e de muyta gente.*"—p. 315.

§ 'Journal R. G. S.,' vol. xiv. p. 38, *sq.*

then again descending to the Malég. After crossing this latter river, a similar ascent had to be made up its opposite bank, *at the summit of which Fernandes reached Gónea*, situate, as I conceive, on the edge of the table-land, and being an *ámba*, or hill-fort, commanding the W. bank of the Malég, and in like manner overlooking the valley of the Abái.* Thus far the nominal authority of the king of Enárea, though already broken by the irruptions of the Gallas, appears to have extended; and from hence a six days' journey, *always south*, brought the missionary and his party to the capital.†

It is unnecessary to pursue Fernandes's route further for the present. What has been introduced here is for the purpose of helping us in the identification of the Malég. The Father says, that Minà, at which place he crossed the Abái, lay *almost due W.* from the source of that river, which would place that spot in near 11° N. lat.; and as the confluence of the Abái with the Dedhésa lies in about that parallel, it might at first sight appear that the Malég is no other than the Dedhésa, or the direct stream of the Baħr el Azreħ, under a different name. But, on the other hand, Fernandes, when in Shinasha, was already to the S. of 10 30' N.; and as the direction of the Abái there is *west-north-west*, it is hardly likely, even with his "3 days' journey further west" and his "*caminhos desviados*," that he should have gone back so far to the *north* as to strike the river in the eleventh parallel. It is, therefore, only reasonable to entertain the opinion, that the Malég is some *smaller* stream falling into the Abái at some distance above, or south-eastward of that river's junction with the Dedhésa. It is true that Fernandes calls the Malég a "large" river, but this indefinite expression proves nothing as to

* My Itinerary affords several instances of *Ambas* similarly placed, such as Déi, in the fork of the A'dabai and Bérsena; Selalkúlla, between the Abái and Djámma, &c.

† My own passage of the Abái, on the way from Shóa to Góđjam (see 'Journal R. G. S.,' vol. xii. p. 250. *sqq.*), is in several particulars so strikingly illustrative of that of Fernandes from Góđjam to Enárea, that it is advisable to give a brief summary of it here. From Shóa I was sent by the king to Abba Moálle, the chief of the Múger Gallas, to be conducted across the Abái. By that chief I was detained several days; and then, instead of my escort's taking me by the direct road westwards, which would have been through the country of the Djársó Gallas, and so across the Abái *below* the junction of the river Djámma, I was made to turn to the north, and to cross first the Djámma and then the Abái, *above the fork*. On this "circuitous route" I had first to descend to the Djámma through a thick wood, next to ascend to Selalkúlla, situate in the fork between the two rivers, and then to descend again to the Abái, which river was passed with the aid of swimmers with gourds lashed to the small of the back, my luggage being carried over on a sort of small raft. In all these particulars the narratives of Fernandes and myself are identical, subject to the mere alteration of the names of the rivers and places. After crossing the second river, I had to reach the high table-land of Góđjam by an ascent, not so steep as that by which the missionary reached Gónea, and consequently so much the longer; after which my route lay for a continuance over the table-land of Góđjam, as his was for six days over a similar country, to which he gives the generic name of Enárea. As to the application of the name "Enárea," see page 57, *sq.* of this Essay.

its real size; and, indeed, while he says that the Abáï had to be swum over, he admits that the Malég itself was crossed *at a ford*.^{*} But this could hardly have been the case had it been the Dedhésa, which is a river having deep water throughout the whole year; since even the Yabús, which is only a tributary of it, is not fordable, but must be crossed by swimming or on rafts.* Besides which, had Fernandes really crossed so large a river as the Dedhésa, he would hardly have failed to mention his having *recrossed* it, which he must necessarily have done before entering Enárea.

There is yet another reason for questioning the identity of the Malég with the Dedhésa; namely, that at the time when Abessinia was first visited by the Portuguese, the western arm of the Bañr el Azreğ was well known to them as the Takui (Tacuy),† such being the name which that river then bore among the Abessinians. If, therefore, the river crossed by Fernandes had been the Takui, he would assuredly have called it by that name, and not by that of "Malég." That the two rivers should have got confounded with one another in our maps, arose doubtless from some misconception on the part, not of the Jesuit missionaries in Abessinia themselves, but of those of their Order in Europe who compiled the accounts of their travels; and the clue to it is possibly furnished by the map of the upper course of the Abáï in Tellez's work.‡ In this map is shown a small portion of the lower course of the "Tacuy," joining the Abáï on its *left* bank, against which is placed the name "*Rio Tacaze*." Now, supposing the designer of this map, who had the earlier Portuguese maps before him, to have written "*Rio Tacaze*" instead of "*Rio Tacuy*" by merely a clerical error, it would have been perfectly natural for another person copying this map, but not having access to the original documents and knowing nothing of the "Tacuy," to imagine that the word "*Tacaze*" was not so much an error in the spelling of the name as a mistake in inserting the name itself against the wrong river, inasmuch as the "*Tacaze*" would have been well known to him as a tributary of the Abáï on its *right* and not on its left bank. He would consequently have felt himself warranted in striking the name out. The Takui would thus have been left in the map without a name; and as the Malég is not shown in it at all (probably from its not being of sufficient importance), the next step in error would have been to place the name without a river against the river without a name.

The identification of the Malég with one of the smaller tributaries of the Abáï, most probably bearing in the present day a

* Cailliaud; vol. iii. p. 47.

† De Barros, '*Asia*,' vol. iii. part i. p. 373, cited at length in page 29 of this Essay.

‡ "*Figura de como o Nilo nasce e saye de Ethiopia*," at p 10.

Galla designation—as the Takui does in its actual name of *Dedhésa*—must be left to the researches of future travellers.*

Having thus traced the Abáï throughout its entire course, and being again brought back to its confluence with the Baħr el Azreķ, we have next to proceed to the consideration of this latter river. The facts which have been already adduced† with reference to M. Russegger's observation of the mountainous country on its right or eastern bank, are sufficient to prove, that, above the point where it is joined by the Abáï, the course of the Baħr el Azreķ has the same general direction that it is known to take lower down; that is to say, from S to N. And from the consideration of those facts, and from the information collected in Abessinia by M. d'Abbadie and myself respecting the *Dedhésa*, there can no longer exist any doubt as to that river's being the direct upper course of the Baħr el Azreķ, or Blue River, the confluence with it of the Abáï, or Hessénm, taking place, as is already stated, in about 11° N. lat.

The course of the *Dedhésa* was first approximately laid down by myself. In connexion with the discovery of this river I may be allowed to enter into the following details. When in Gódjam in 1842, I obtained positive information of the existence of a river of large size joining the Abáï to the west of Shínasha, which river, from various considerations,‡ I was induced to regard not merely

* On the assumption that the name *Nile* is of Ethiopian origin, and ought consequently to be traceable in the native appellation of some one of the principal tributaries of that river, M. d'Abbadie attempts to derive that word from the name *Didesa* (*Dedhésa*). The steps of this etymological *tour de force* are as follows:—*Didesa*—*Dides*—*Liles*—*Niles*—*Nilus*! See 'Nouvelles Annales des Voyages,' 1815, vol. ii. p. 109. But the fact appears to have been overlooked that "*Dedhésa*" is a *modern* name, like *Beśésá*, *Wurgésá*, &c., and many others, which, since the Galla invasion, have superseded the original native names.

† See page 11, *sq.*

‡ One of these considerations, as is stated in my letter of the 6th September, 1842, was the evidence of Mr. English, already cited in page 10, *sq.*, as to the source of the Baħr el Azreķ's being situate far to the south of Abessinia. Another, as is also mentioned in that letter, was the assertion of Mr. McQueen, in p. 236 of his 'Geographical Survey of Africa' (which work I had with me in Abessinia), that Mr. English "most pointedly states, from a personal knowledge, and even ocular demonstration of the fact, that the Baħr el Abiad began (23rd April) to rise one month before the Baħr el Azreķ;" it being repeated in the same page, that "the rise of the Baħr el Abiad at its junction with the Blue river commences in the month of April." This would make the flooding of the Baħr el Azreķ, at the same spot, to commence some time in the month of May. But from my personal experience of three years,—in a tropical climate as good as three centuries,—the flooding of the Abáï does not begin in Abessinia till about the summer solstice (June 21). And as a month or perhaps more before that time the Baħr el Azreķ was alleged to begin to rise at Káartúm, 500 miles lower down the stream, the only conclusion that could be drawn from the premises was, that the western arm of the Baħr el Azreķ must have its source very much further to the south; and as the basin of this arm was thus made to extend so far to the south as to coincide with that of the Gibbe (*Zebeé*) and Gódjeb, there was no alternative but to regard all those rivers as belonging to one hydrographical system. Since my return to England, however, I have ascertained, from a reference to Mr. English's original work ('A Narrative of the Expedition to Don-

as the direct stream of the Baħr el Azreḵ, but as the recipient of all the waters of the countries to the S. of Gódjam as far as Enárea, Káffa, and Yángaro, and even further on. In accordance with this hypothesis I sketched a map of those countries, in which this river was laid down as forming the lower course of the Gódjeb (the connexion of which latter river *with the Nile, and not with the Indian Ocean*, I had then ascertained), and as having the Gibbe, the *Dedhësa*, the Báro, and the Gába as its tributaries. This map was dated the 6th of September, 1842, as was likewise a letter addressed to the Rev. J. M. Trew, then Secretary to the African Civilization Society and now Archdeacon of the Bahamas, in which my reasons were given for its delineation in that form; and on the 19th of October the two, together with several other letters and maps, were despatched to Captain, now Major Sir William Cornwallis Harris, the British envoy in Shoa, for transmission to England. They reached his hands prior to the 11th of November following, on which day he wrote to me acknowledging their receipt; but they did not arrive in London till more than six months afterwards, namely, on the 13th of May, 1843.* By Mr. Stokes, Mr. Trew's successor as Secretary to the African Civilization Society, these documents were in part published in the 'Friend of the African' for June and July, 1843,† and then delivered over to Colonel Jackson, the Secretary of the Royal Geographical Society, Mr. McQueen having first been allowed,

gola, &c.'), that the time of the flooding of the Baħr el Abyaḍ has been misstated by Mr. McQueen. The American traveller gives no date whatever of the Christian calendar; but he says (pp. 144, 146), "During our stay opposite Halfya [Hal-fáyah], the Nile, on the night of the 23rd [Sha'bán], rose suddenly about two feet. . . . This overflowing of the Nile was occasioned by the rise of the Bahur el Abiud, which, this year at least, commenced its augmentation nearly a month sooner than the Nile" (that is, the Baħr el Azreḵ). Now the 23rd Sha'bán, in the year 1236 of the Hidjrah, corresponds, not with the 23rd April, as asserted by Mr. McQueen, but with the 24th May, 1821; and this date is confirmed by M. Cailliaud, who states expressly (vol. ii. p. 191) that the river at Halfáyah "rose eight centimètres during the night of the 24th May." Hence the flooding of the Baħr el Azreḵ would take place, not some time in May, but *towards the middle of June*; and consequently all my arguments, founded on the assumption of the rise of this river in Sennár one month earlier than the Abáa in Abessinia, fall to the ground. And, in fact, Mr. English, in a subsequent part of his work (p. 165), states that the Baħr el Azreḵ "lost its transparency" on the 10th of Ramaḍán (= 11th June, 1821), and that "the day that presents the river troubled marks the commencement of its augmentation." This slight precedence of the flooding of the direct stream of the Baħr el Azreḵ before that of its Abessinian branch, is accounted for by the fact, that the first waters troubled are those of the *Dedhësa*, the sources of which river lie about two degrees to the south of the Abáa.

* This is not stated with a view to impute to Sir William C. Harris any neglect in the transmission of my letters, but simply for the purpose of explaining how it happened, that the one in question had not been communicated to the Royal Geographical Society when I arrived in England, more than a twelvemonth after it was written. There doubtless existed a sufficient cause for the lapse of time which occurred between its receipt in Shoa and its arrival in London.

† Vol. i. p. 14, *sqq.*; and p. 27, *sqq.*

as a matter of favour, to inspect and take copies of them.* When my papers reached Colonel Jackson's hands, it was already too late in the season for him to make any use of them, so that they lay by till my own arrival in London in the month of October following. As, subsequently to the transmission of these documents, I had collected much additional information in Abessinia, I immediately began preparing a memoir, which was dated the 23rd of November, 1843, 'On the Countries South of Abessinia,' in which that subsequent information was incorporated, and which I requested might be substituted for the previous one of the 6th of September, 1842. This being permitted, the substituted communication was read before the Royal Geographical Society early in the next season, namely, on the 11th of December, 1843, and published, with a map, in the fourteenth volume of the Society's 'Journal.'

This explanation is due both to the Royal Geographical Society and to myself, on account of my previous letter and map of the 6th of September, 1842, which are still in the archives of the Society, having been brought to public notice by individuals through whose hands they passed before they came into the Society's possession—namely, by Sir William C. Harris in the 'Introduction' to the second edition of his 'Highlands of Æthiopia,'† and by Mr. McQueen in an article on African Geography in 'Blackwood's Magazine' for June 1844;‡ from both of whom my opinion that *the Gódjeb joins the Nile instead of flowing into the Indian Ocean* (as I was myself the first to imagine, but in error§), has met with express condemnation.

Returning to the consideration of the Dedhésa, it is remarkable that the existence of this western arm of the Blue River should have been recorded upwards of two centuries ago by de Barros;|| and yet, by some fatality, that writer's most accurate description of it should have been altogether disregarded. He says, "With

* 'Friend of the African,' vol. i, p. 27; and 'Blackwood's Magazine,' vol. lv. p. 739. Mr. McQueen is mistaken in saying that I "received some pecuniary assistance from the African Civilization Society," of which he was a member.

† "I have ascertained that the Gochob [Gódjeb] does not flow to the Nile, as it is made to do in a map which I have seen, constructed by one of the reviewer's greatest authorities."—vol. i. p. xxiv. The review here alluded to is one of Major Harris's work, in the 'Westminster Review' for March, 1844, vol. xli. pp. 183, sqq., 619, sqq.

‡ "Amongst the maps there was one of the countries to the south of the Abay, including Enarea, Kaffa, and Gingiro, constructed at and sent from Yaush in Gojam, September 6, 1842. together with some of the authorities on which it had been made.

... The whole delineation, a copy of which I preserved, presented a mass so contrary to all other authorities, ancient and modern, that to rectify or reduce it to order was found impracticable, or where attempted only tended to lead into error."—vol. lv. p. 739.

§ See 'Information respecting the Countries S.W. of Shoa,' in 'Journal R. G. S.,' vol. xii. p. 87; and 'A Statement of Facts relative to the Transactions between the Writer and the late British Political Mission to the Court of Shoa,' p. 7.

|| 'Asia,' decad. iii. fol. 83, Lisb. 1628; vol. iii. part i. p. 370, edit. 1778-83.

respect to what we have learned concerning the territories of the Emperor of Ethiopia, the same lie between the streams of the rivers Nile, Astaboras, and Astapus, which Ptolemy describes in his fourth table of Africa. These rivers the natives call Tacuy [Takui], Abavy [Abáwi or Abái], and Tagazy [Tákkazie]; of which they regard the central one as the largest, and for this reason they give it the name it bears, which signifies 'the father of rivers.*' It issues from the lake which Ptolemy calls Coloë and the natives Barcena" [Baħr Tsána]. And further on he says,† "The three rivers which water this country are not at their sources sufficiently large to irrigate the land of Egypt, but they are aided by the waters of other very considerable rivers. For the most eastern one, which is named Tagazy, receives seven streams; the second one, named Abavy, eight; and the Tacuy four, which have their rise in the mountains of Damut, Bizamo, and Sinaxy,‡ independently of others which join it before it arrives thus far."

The only objection that might possibly be raised to this identification of the Takui with the Dedhésa or Baħr el Azreḵ is, that by that river de Barros must be understood as referring to the *Baħr el Abyad*. But this objection has already been met by the learned d'Anville; not, indeed, with reference to the Takui, which river would appear not to have been known to him, but with respect to the "Malég" of the maps, which is, however, substantially the same thing. That distinguished geographer, in his 'Dissertation sur les Sources du Nil, pour prouver qu'on ne les a pas encore découvertes,' § pointedly notices the ignorance of the Abessinians with respect to all countries beyond their own immediate limits, as instanced in the conquest made, in the year 1613, by Ras Sela Kristos, of the neighbouring districts of Wámbera and Fazókl, which before that time were unknown to them. || Now, if in the year 1613, the valley of the Baħr el Azreḵ itself was so utterly unknown to the Abessinians that it should be called by them the New World, it is not to be imagined that de Barros,

* But in another place (ibid., p. 371) he says that the Abái was so called by the Abessinians, only because they had never seen the Takui, i.e. the pseudo-Nilus. See page 30, note.

• † 'Asia,' vol. iii. part. i. p. 373.

‡ Pronounced "Sinašii." In the Amhara and Gafat languages the country is called Shinasha; in Agáwi Tziintzi; and by the natives themselves Sinicho.

§ "Les Abissins eux-mêmes paroissent ignorer ce qui s'éloigne de leurs limites. On lit, dans le P. Jérónimo Lobo, que Ras Séla Christos, général des troupes de Négusa Segued, voulant en 1615 [1613] porter la guerre dans les pays qui confinent à l'Abissinie vers le couchant, étonné de leur vaste étendue, les désigna par le nom d'*Adis Alem*, qui signifie un nouveau Monde."—'Mémoires de l'Académie Royale des Inscriptions et Belles Lettres,' vol. xxvii. (1759) p. 62, sq.

• || "Regnumque utpotè incognitum et ob vastitatem vocavit Ayzolam [Hadis Alem] id est novum mundum." Paez, in Kircher's 'Œdipus Ægyptiacus,' Syntagma I. cap. vii. p. 59.

whose information, derived from Abessinian sources, was of a much earlier date,* should refer to the far more distant Baħr el Abyad under the name of Takui.† But there is even a more conclusive answer to such an objection. It is, that the position attributed by the Portuguese writer to the sources of the tributaries of the Takui, in the mountains of Dámot,‡ Bizámo, and Shínasha, fixes the precise locality of that river, determines the total want of connexion between it and the Baħr el Abyad, and establishes its identity with the Dedhása and with M. Russegger's upper course of the Baħr el Azrek, beyond the possibility of question.

In my memoir of the 15th of November, 1843, and the map accompanying it, are given various particulars respecting the Dedhása, which have since been confirmed in a most striking manner by M. d'Abbadie, in a letter written from Gódjam, in April, 1844,§ after his return from Enárea and Káffa. Of course, the details which M. d'Abbadie has it in his power to give must, in a great measure, supersede the previous information collected by me. Still, I may be allowed to observe that my map, which was composed from oral information obtained in Gódjam, is proved by that traveller to be substantially and in many cases minutely correct, so as to serve as an illustration scarcely less to his letter than to my own memoir. It is from M. d'Abbadie's letter that the following particulars respecting the upper course of the Dedhása are extracted:—

Ascending the right bank of the Dedhása, the Angar, a river of note in this portion of Africa, is first come to: it separates the Galla district of Horro from that of A'muru.¶ Above the Angar the Dedhása is joined by the Wurgésa,¶¶ the Walmay,** and the Bókak;†† and still higher up, in the desert of Sédecho, by the Aëtu, and then by three other rivers, which carry to it the waters

* He died on the 20th October, 1570. See his *Life*, prefixed to the Lisbon edition (1778) of his 'Asia,' vol. i. p. lvii.

† In one passage de Barros says that the Abessinians call the Nile "Toavy;" but the context shows that this is merely a misprint for "Tacuy":—" . . . as correntes do rio Nilo, que elles chamão Toavy [Tacuy], de que elles tem sômente noticia sem uso de suas aguas, por razão das grandes serranias de Damud, e Sinazy se metterem entre elles, e elle. E daqui vem chamarem elles ao rio Abavy, pai das aguas, por não verem as do Nilo."—vol. iii. part i. p. 371.

‡ This is the ancient Damot, south of the Abáz, as shown in the maps of the Portuguese, and not the modern province of that name in the south-west of the peninsula of Gódjam.

§ 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 107, sqq.

¶ In my MS. notes I find recorded the river Hángar, as running between A'pole in Horro, and Túllo Kisto in A'muru. This is manifestly the A'uker (Anquer) of the maps of the Portuguese; and it affords a yet further proof of the identity of the Dedhása with the Takui.

¶¶ M. Tutschek, in his 'Galla Dictionary,' (8vo. Munich, 1844) p. xiii., mentions a young Galla, named O'chu Aga, who came from "Urgeza in Sibú." The position precisely corresponds.

** In my map Walmáa.

†† In my map Bókak.

of the kingdom of Géra. The head of the Dedhésa is situate in about 8° N. lat. and 75 miles to the W. of Sákka,* the capital of Enárea. It rises in a swampy meadow or sort of marsh, situate on the same plateau which gives rise to the rivers Báro, Gándji, Náso, and Gódjeb—all tributaries to the White River. Leaving on its left bank the kingdom of Gúma, from which it receives the Múllu, the Dedhésa first runs in a direction nearly E.; but on reaching the heights of Kóchau,† in the kingdom of Límму or Enárea, it turns round sharply to the N., separating that kingdom from the adjoining one of Gúma. Its course is here very winding, and in the dry season it is easily forded. Below Gúma it is joined on the left bank by the greater and lesser Sidan, the Chára, and the Dábana.‡

Thus far M. d'Abbadie. From information obtained by myself, there is a noted ford over the Dedhésa on the caravan-road to Túmhe, the country from which is brought to the market of Báso,§ in Gódjam, the *Koraríma* || (called by the Arab traders *Kheil*,¶ the “Chéle” of Rüppell**), a sort of cardamom,†† which is exported from Maşówah to India in some quantity. The name of this ford is Mélka-Kwóya,‡‡ apparently the same, with a dialectic variation, as that of the Melka-Kúya over the Hawásh, on the road between Tadjúrrah and Shoa. The country on the left bank of the Dedhésa, which comprises the districts of Búnno, Túmhe, and Djímма-Dábo (or Dápo), is, among the Gallas who frequent the market of Báso, usually designated by the generic name of Wallégga. It is inhabited by numerous independent Galla tribes, and stretches out westwards in vast grassy plains, which form the elephant-hunting grounds of the Gallas of Gúderu.§§ The ivory is brought by them for sale to Báso, from

* My position of the source is 7° 40' N. lat., and 40' W. of Sákka.

† “La hauteur de Kotchao.” By this I understand the Abessinian expression *áfaf*, which means, not a mountain, but the edge of the table-land, over which the river precipitates itself into a deep ravine.

‡ In my MS. notes there are several routes in which the Dábana is mentioned, whence I conclude that it is a river of some magnitude.

§ See an account of this market in the ‘Friend of the African’ (1843), vol. i. p. 134, *sqq.*, p. 145, *sqq.*; vol. ii. p. 7, *sqq.*

|| ‘Journal R. G. S.’ vol. xiii. p. 263.

¶ *Khil* of the Arabic lexicons. The word “*Khil*” is little used by the Arabs, and means, according to the Kámús, *Rue*, or rather *Pegatum Harmalah*: it does not occur in Ibn Baítár’s ‘Materia Medica.’ Nothing, however, is more uncertain than the real value of Arab names of plants, and several different plants had doubtless the same name.—F. S.

** ‘Reise in Abyssinien,’ vol. i. p. 193.

†† The *Cardamomum majus* of Cordus. In Dr. Pereira’s ‘Materia Medica’ (2nd edit.), p. 1026, it is figured as “Madagascar Cardamom;” the *Cardamomum maximum* of Matthioli, and the *Amomum angustifolium* of Sonnerat and Smith. At Báso I was informed that it is the produce of the districts beyond Túmhe, that is to say, to the south and west of that country. [See, on this subject, the ‘Pharmaceutical Journal’

¶ April and May, 1847, vol. vi. p. 466, *sqq.*, and p. 511, *sqq.*]

‡‡ *Mélka*, in the Galla language, means “ford.”

§§ ‘Journal R. G. S.’ vol. xiii. pp. 255, 268.

whence it is carried to Maşówah, and thence exported to India. In the lower portion of its course the Dedhésa flows through a desert tract called Hándak,* at a short distance to the west of Límму-Sóbo, the country of M. Jomard's Galla, Wáre.†

M. d'Abbadie is inclined to the opinion that the Dedhésa is identical with the Túmat.‡ The same opinion was expressed by myself in my letter of the 6th September, 1842;§ but from what is stated in the preceding pages this opinion is manifestly untenable. Lower down, in about 10° 14' N. lat. according to M. Russegger,|| the Dedhésa, which has here acquired the name of the Bahr el Azrek, receives on its left bank the Yábús, a river well known to us from the reports of the Europeans who have ascended the former in company with the troops of the Páshá of Egypt. The Yábús is a considerable river, having much water throughout the year. It is not fordable, being crossed either by swimming or on rafts;¶ but, according to Russegger,** it is far from having the length attributed to it by Caillaud. M. Russegger calls this stream the *Inbúss*. Among my MS. notes of information obtained in Gódjam, I find mention of a river in this direction called the *Dabús*. All these are evidently but different forms of the same name. Among the Shánkálas, or Bértá negroes, whose pronunciation is exceedingly thick and inarticulate,†† the native name would appear to commence with an indistinct nasal sound, common to many African languages—*N'bús*—from which has been made the Yábús of the maps, but which M. Russegger would represent by *Inbúss*; while, from the ready permutation of the letters *n* and *d*, it takes the form of *Dabús* in the mouths of the Gallas, from some of whom I heard of it.

At about 60 or 70 miles below the "*N'bús*," the Bahr el Azrek is joined by the Túmat, a river of much less importance

* Khandak means "a foss or dyke" in Arabic.—F. S.

† 'Journal R. G. S.,' vol. xiii. p. 256.

‡ "Un homme de Sibou nous ayant assuré avoir vu la jonction du Abbaya avec le Didesa, nous croirions pouvoir identifier ce dernier avec le Tumat de M. Caillaud."—'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 110. "Le Didesa paraît être le Toumat de M. Caillaud, mais je n'ose encore l'affirmer."—'Bulletin,' 3rd Series, vol. iii. p. 135.

§ That is to say, I imagined the Túmat to be the lower course of the western arm of the Bahr el Azrek. See 'Blackwood's Magazine,' vol. lv. p. 739. In my Memoir of the 13th November, 1843, I looked upon the Yábús as being the lower course of the Dedhésa, which was still an error, though but little removed from the truth, since the two rivers have a common channel for about 45 miles, before they are joined by the Abái. || 'Reise, &c.,' vol. ii. part ii. p. 552. ¶ Caillaud, vol. iii. p. 47.

** In a small pamphlet from which I made some extracts previously to my departure from England in 1840, but to which I have lost the reference. I apprehend it must be the 'Wissenschaftliche Beobachtungen, &c.,' referred to by M. Jomard in his 'Observations sur le Voyage au Darfour,' p. 73. I have made inquiries after this pamphlet in Germany, but in vain.

†† See a Vocabulary of their language in the 'Proceedings of the Philological Society,' vol. ii. pp. 94 and 97, *sqq.*

than the former. When M. Cailliaud visited the *Túmat* in the beginning of January, 1842, he found it in great part dry, its bed meandering through an extensive plain.* He adds that it has water throughout the whole year; but on this point he disagrees with M. Weingartshofer,† an Austrian gentleman, formerly in the medical service of Ahmed Páshá, the late governor of Sennár, who informed me that the Egyptian troops call the *Yabús* a *baḥr*, or *nahr*, that is to say, a river flowing in all seasons, while the *Túmat* is only a *khor*, or the valley of a winter brook.‡ And this is confirmed by Linant,§ as well as by Russegger, who says that in the dry season the *Túmat* has no water at Fázókl, its bed being sandy; but that in the country of Bérta, where it is rocky, the river has water at all times of the year. || M. Russegger adds that “the *Túmat* comes from the S., and has its origin in the innumerable mountain-torrents between Singe and Fázókl. Consequently, it has not half the length attributed to it by Cailliaud.” The error of the French traveller appears to arise from his considering the *Túmat* to be the lower course of the *Malég* of the maps.

As below the *Túmat* the *Baḥr el Azreḳ*, or Blue River, is joined only by insignificant wádis or winter-torrents undeserving of mention, we are once more brought to its confluence at *Khartúm* with the *Baḥr el Abyad*, or White River. Before entering upon the particular investigation of this latter river, it is proper that we should discuss the much-agitated question of the relative importance of the *Baḥr el Abyad* and *Baḥr el Azreḳ*, and of their respective right to be considered as the parent stream.

Whatever difference of opinion may heretofore have existed on this subject, the expeditions which have ascended the *Baḥr el Abyad* by order of the Páshá of Egypt, must be considered as having set the matter finally at rest, so far at least as regards magnitude, by proving the immense superiority of this river over

* Vol. ii. p. 386.

† It is to this traveller that I am indebted for the information respecting the Páshá of Sennár's “Slave-Hunt” in 1843, published in the ‘Friend of the African,’ vol. i. p. 107, *sqq.*, and also for the account of the forced march of a slave caravan across the Nubian Desert, given in p. 120 of the same volume.

‡ “*Khor*, ein Regenstrom, ein Regenbach, Torrent.”—Russegger, vol. ii. part ii. p. 510. [According to the Arabian lexicographers, *baḥr*, properly the sea, or a very large lake, such as the Caspian, is also used for a very large river, such as the Nile: *nahr* is the general term for river; and *khor* (properly *khaur*) means a valley between high mountains, the mouth of a river, and a bay or gulf of the sea: the latter is the sense in which it is commonly used by Arab writers. *Wádi* (in an abbreviated form, *wád*, sometimes pronounced *wéd*) signifies any narrow valley, and the bed of a torrent at some seasons dry.—F. S.]

§ ‘Journal R. G. S.,’ vol. ii. p. 185.

|| On the 5th January, 1838, M. Russegger encamped near Fázókl, in the dry bed of this river. By digging a foot deep in the sand water was found. See ‘Reise, &c.,’ vol. ii. part ii. p. 551, *sq.*

its better-known Abessinian branch. As, however, some persons may still entertain the opinion that the Bahr el Azrek, though the smaller stream, ought to be regarded as properly the upper course of the river of Egypt, we will proceed to consider what real grounds there are for entertaining such an opinion.

Dr. Murray, the able and ingenuous commentator and apologist of Bruce, at the same time that he admits that traveller to be in error in supposing the Bahr el Azrek to be the Nile of the ancients, adduces arguments in excuse, if not in defence, of this error, which deserve to be reproduced. In a note on the remark in Bruce's MS. Journal that "the Nile is still at Halfaia [*i. e.* 9 miles below the junction] called El Azergue [Azrek], not the Nile," Dr. Murray observes,* "The name of the Abyssinian branch extended to the united stream either insinuates that the colour of the Abay is still retained by the river, a circumstance which, considering the superior mass of the western waters, white with mud,† is not very probable; or that the river is still considered as a continuation of the Abyssinian branch, and consequently retains the name of its original. All the Arabs, from Fazuclo to the junction, know the river of Habbesh by the name Bahr el Azrek. If they give this appellation to the river after it has joined a larger branch, it is plain they consider the larger branch as received into the smaller, not the smaller as received into it. It is the straight course which determines these unlettered savages. Many similar instances occur within our own island of rivers being called after the inferior branch, because they run straight on in its direction; while the greater torrents that rise in more elevated grounds are forgotten in the course of these, because they join them in an angular position. That the Bahr el Abiad deserves, from its importance, to be reckoned the principal source of the river of Egypt is not to be doubted; that Herodotus and Ptolemy, who led their translators, the Asiatic Arabs, considered it as such is evident; but the natives of Habbesh, Sennaar, and Atbara seem to dispute these facts so generally that Mr. Bruce may surely be excused in following their opinion."

This reasoning, ingenious as it is, is, nevertheless, without any real foundation. If the "straight course" and "the name Bahr el Azrek" are to give an inferior branch a claim to the title of "the Nile," to the prejudice of the larger stream, then is the *Dedhesa* entitled to that distinction, since, as has been shown in a former part of this Essay,‡ it is that river and not the Abáï, the river visited and described by the Portuguese Jesuits and after them by Bruce, which answers to these two conditions. But

* 'Life of Bruce,' (4to. edit.) p. 429.

† Is it not rather that the colour of the Bahr el Abyad arises from the comparative absence of mud in its waters?

‡ Page 26, *sqq.*

without attempting to evade the question by a side argument like this, we will at once take higher ground, and show that Dr. Murray is mistaken as to the fact both of the Bahr el Azrek's being *generally recognised by the natives* as the parent stream, and also of its being the *direct* continuation of the Nile.

Our first authority is M. Russeger, who states as follows:—“Many travellers make a distinction between the *White Nile* and the *Blue Nile*, designations of which the natives know nothing. Independently of the Arabic names ‘Bahr el Azrek’ and ‘Bahr el Abyad’—the *Blue and White Rivers*—they apply the name of ‘the Nile,’ absolutely, to the *White River*, as being the more important of the two large streams, but never to the *Blue River*, which they regard merely as a stream of minor importance, like the Tákkazie.”* And again:—“The principal arm of the Nile is the Bahr el Abyad, which is therefore very often called by the natives ‘the Nile,’ a name which they never use in speaking of the *Blue River*. They look upon the latter as altogether a subordinate stream. And this opinion is, in a manner, quite in accordance with nature; for, *whether as regards the direction of its course or its volume of water*, the Bahr el Abyad is a stream of considerably greater importance than the Bahr el Azrek.”†

Mr. English corroborates this opinion, and states further that by the natives of Sennár the Bahr el Azrek is called *Adit*, and that it “enters the Bahar el Abiud *nearly at right angles*; but such is the mass of the latter river that the Nile [*i. e.* the *Adit*] cannot mingle its waters with those of the Bahar el Abiud for many miles below their junction.” And again: “At the point of junction between the Bahar el Abiud and the *Adit*, the Bahar el Abiud is almost barred across by an island and a reef of rocks; this barrier checks its current, *otherwise it would probably almost arrest the current of the Adit*. It is, nevertheless, sufficiently strong to prevent the *Adit* from mingling with it immediately, although the current of the *Adit* is very strong, and enters the Bahar el Abiud *nearly at right angles*.”‡ On the other hand, M. Cailliaud, in speaking of the Bahr el Abyad above the junction, observes that.§ “for the first 2 leagues it appears to run about S. 45° W., forming a straight line with the Nile in the same direction.” And again:|| “The direction of the White River is almost S.W., and consequently, as I have already stated, *it runs in one line with the Nile N. of the Blue River*.”

That at the present day the natives of Abessinia regard their river, the Abáï, as the Nile, will be conceded; but they likewise

* ‘Reise, &c.,’ vol. ii. part i. p. 515.

† Ibid., vol. ii. part ii. p. 82.

‡ ‘Narrative of an Expedition to Dongola,’ p. 196.

§ ‘Voyage à Méroë, &c.,’ vol. ii. p. 198.

|| Ibid., vol. iii. p. 94.

believe it to be the Gihon of Genesis! But the ancient Axumites evidently thought differently, and if they knew the Abāi at all (which may be doubted), they looked on it only as a tributary of *their* river, the Tākkazie,* which latter was considered by them to be the upper course of the Nile.† This is proved by the second Adulitic Inscription of Cosmas Indicopleustes, in which the province of Sāmien (Samen), immediately to the W. of the Tākkazie, is described as being “beyond the Nile.”‡ And, in fact, as we proceed up the river, we shall find that the native population dwelling on the banks of any branch on either side assert their own river to be the head of the main stream, simply because they are ignorant (as the Abessinians in particular are known to have always been §) of the existence of any larger river of which it is a tributary. || What we require is the testimony of the natives dwelling *between the two streams*, and thus possessing a knowledge

* *Tākkazie*, in the Gēez or ancient Ethiopic language, is not a proper name, but an appellative signifying “river:” e. g. **ጥሕ** : **ግዋን** : *Tākkazie Gēyón*, the river Gihon, i. e. the Nile; **ጥሕ** : **ጠግረ** : *Tākkazie Tiēgrēs*, the river Tigris. Thus the Tākkazie of Abessinia was the river, *κατ' ἑσχῆν*. (See Ludolf, ‘Lexicon Æthiopicum,’ *sub voc.* **ጥሕ** : and Dr. Murray’s *note*, in vol. iv. p. 349, of the second edition of Bruce’s ‘Travels.’) Accordingly, in the Ethiopic version of the Scriptures, the *river* (**ጥሕ**) whose waters were turned into blood by Moses (Exod. vii. 15–25) is called *Tākkazi*.

As to the meaning of the **נ** of the Hebrew text, see ‘Origines Biblicæ,’ vol. i. p. 280; and ‘Asiatic Journal,’ vol. xvii. (1835) p. 93, *sq.*

† The Emperor Lalibala is celebrated in Abessinian and Arabian history for a successful attempt which he is said to have made to turn the course of the Nile. On this subject Mr. Salt remarks (‘Voyage to Abyssinia,’ p. 473, *note*), “The ignorance of the times may have favoured the opinion of the possibility of such an undertaking, but in all probability the only source of a river over which Lalibala had a command was that of the Tacazze [*Tākkazie*], which takes its origin in Lasta.” Without expressing any opinion as to the practicability of the undertaking thus imputed to Lalibala, I may remark that, from what is above stated, it is manifest that the “Nile” of that monarch was the Tākkazie. It is even not improbable that it was the *eastern* arm of that river, now known as the Tselāri.

‡ “After this I reduced Ava and Tíamo or Tziāmo, Gambēla and the country round it, Zingabēne, Angabē, Tiāma, and the A’thagai, Kālaa, and *Semenē, a nation beyond the Nile*—*Σμενὴ ἔθνος ὑπερὸν τοῦ Νείλου*—among mountains difficult of access and covered with snow; in all this region there is hail and frost, and snow so deep that the troops sunk up to their knees. I passed the RIVER [to attack these nations], and subdued them”—*τὸν ποταμὸν διαβὰς, ὑπέραβα*.”—Cosmas, in Fabricius, ‘Bibliotheca Græca,’ lib. iii. c. 25, § 32: vol. ii., 1716, p. 606; and Vincent’s ‘Commerce of the Ancients,’ vol. ii. p. 541, *sq.* There can be no question as to the fact that the *Tākkazie* is here meant.

§ See page 29 of this Essay. M. d’Abbadie remarks, in a letter published in the ‘Athenæum,’ No. 918, of May 3rd, 1845, p. 542, “I admit that all Abyssines name the Abbey as the principal branch of the Nile, but this is from sheer ignorance, since they maintain, at the same time, that were the Abbey made to flow through Shawa [Shoa] into the basin of the Hawash, Egyptian harvests would perish by drought.”

|| Even when some of them had become acquainted with the existence of a larger arm, they would of course see no reason to alter their nomenclature. Thus, it is quite consistent that the people of Sennār should continue to call the river on which that town lies, the “Nile,” (English says they call it the *Adi*,) though the *merchants* of that town know the Bahr el Abyāḍ to be the much larger stream of the two. See Burckhardt, ‘Travels in Nubia,’ p. 350, *sq.*

of *both*; and upon this point M. Russegger's statement above cited is conclusive.

If, on the other hand, we appeal to the testimony of former ages, we shall arrive at precisely the same result. The opinions of the ancients on this interesting question have been so ably discussed by d'Anville, in his '*Mémoire sur le Nil*,'* that it would be a work of supererogation to make any further statement here. All, therefore, that is necessary is to refer to the work of that learned writer, with the remark that, as to him is due the merit of having first laid down the course of the Bahr el Abyad, in a manner which subsequent positive information has shown to be substantially, indeed almost minutely accurate, so likewise has he that of having demonstrated that this river is the *Nile* of Ptolemy.

There is only one other point remaining to be adverted to, which is the fact, irrespective of all opinions, that the Bahr el Abyad is by far the larger river. From the extracts from Bruce's MS. Journals, which were published by Dr. Murray, we have that traveller's testimony that the Bahr el Abyad is of much greater magnitude than the rival stream:—"The Abiad river is three times as big as the Azrek (Nile)."† And M. Linant, who, in the year 1827, ascended the former river as far as Al-leis, records that "the Bahr-Abiad is undoubtedly the principal of the two rivers which form, by their junction, the Nile of Egypt. It discharges a greater volume of water than the Bahr-Azrek; and, although somewhat narrower immediately at the confluence than it is higher up, it is, even in this respect, equal to the Blue River. The colour of its waters is also that which characterizes the conjunct stream in the dry season."‡ The evidence of Cailliaud, English, and Russegger might likewise be adduced. But we stand in no need of individual testimony to prove what, in the present day, is an established and notorious fact. The recent explorations of M. d'Arnaud and his companions for 1000 miles above the point where the Bahr el Abyad is joined by the Bahr el Azrek, have irrevocably determined that the former is by far the larger river. And it must be borne in mind, that, above 9° 30' N. lat., the stream which they thus navigated is only *one of three*; for, in about that parallel, two arms branch off from the main stream, the Sobát or Télfí to the E. and the Bahr el Ghazál or Keiláh to the W., each of which is nearly, if not quite, as large as the central stream ascended by the Egyptian expeditions. Compared with such a river as this, the Bahr el Azrek, even with its two arms, the Dedhésa and the Abái, sinks into comparative insignificance.

Whether, then, we consider the relative magnitudes of the two

* '*Mémoires de l'Académie Royale des Inscriptions et Belles Lettres*,' vol. xxvi.

† '*Life of Bruce*,' p. 418.

‡ '*Journal R. G. S.*,' vol. ii. p. 185.

ivers, the direction of their respective courses, or the volume of their waters; whether we regard the opinions of the ancient geographers, or those of modern travellers, or of natives acquainted with *both* streams—for the evidence of such as only know one is, of course, inadmissible;—the result is the same. In all and each of these points of view, the Bahr el Abyad, or White River, is the principal stream, and the Bahr el Azrek, or Blue River, is the subordinate or tributary. In pursuing our course, therefore, as is now requisite, up the former river, we may rest assured that we are ascending *the Nile*.

As far as Al-leis, in $13^{\circ} 43' \text{ N. lat.}$, the main stream was ascended by M. Linant, as already mentioned. For our knowledge of its course above that point we are indebted to the three expeditions undertaken by command of the Viceroy of Egypt, between the years 1839 and 1842. Without pretending to enter into the details of these expeditions, it will be sufficient to say that the first reached as far as about $6^{\circ} 30' \text{ N. lat.}$ —at the time erroneously stated to be as high as $3^{\circ} 35' \text{ N. lat.}$ *—the second to $4^{\circ} 42' 42'' \text{ N. lat.}$ † and $31^{\circ} 33' \text{ long. E. of Greenwich}$, and the third not quite so far. Of the second, which is thus seen to be the most important, the results have been partially made known by M. d'Arnaud, the scientific chief of the expedition, and pub-

* M. Werne says ('Blick in das Nil-Quellland,' p. 42; and 'Monatsberichte,' N. S., vol. ii. p. 16). "Die erste Expedition drang vor *bis zum Lande der Elliab* ($6^{\circ} 30' \text{ n. B.}$) am 27 Januar 1840. Ihre astronomischen Berechnungen sind falsch, wenn sie den $3^{\circ} 35'$ angaben."

† In consequence of doubts having been expressed by M. Russegger in his 'Wissenschaftliche Beobachtungen,' p. 66, as to the geographical results obtained by M. d'Arnaud and his party, whom he imagined to have been unprovided with instruments for making the necessary observations, M. Jomard has made a formal declaration on the subject in his 'Observations sur le Voyage au Darfour' (8vo. Paris, 1845), p. 73, *sqq.* He says, "The observations were made between the 19th November, 1840, and the 2nd February, 1841, and between the 5th February and the 1st June, being in number about eighty, between Kharfûm and the furthest point explored, and consisting of 39 on the voyage up the river (of which 28 were of latitude and 11 of longitude), and 43 on the return down. Those of longitude were by lunar distances and by the chronometer. The extreme point of the expedition, in $4^{\circ} 42' 42'' \text{ N. lat.}$, is at the furthest extremity of the island of Jeankar, between the village of Waleny on the right bank of the Bahr el Abyad, that of Alacone on the left bank, and the mountains of Belenia and Korek towards the south. I could give (he adds) the names of the other places of observation. The instruments with which the observers were provided consisted of a reflecting circle, a chronometer by Bréguet, sextants with artificial horizons (mirrors and mercury), besides magnetic compasses, thermometers, barometers, hygrometers, &c."

In a letter dated the 23rd January last, M. Jomard informs me further that he is now in possession of M. d'Arnaud's detailed map of the river, three metres (nearly 10 feet English) in length, and that he has lately received the whole of the original observations, which are in course of calculation. The journal of the voyage is in three volumes, filled with sketches and sections of the valley of the river, made almost daily; besides numerous barometrical and meteorological observations.

I have felt it my duty to add this note, in consequence of the doubts respecting the extreme point reached by M. d'Arnaud, which were expressed at the Meeting of the Royal Geographical Society when this Paper was read.—13th February, 1847.

lished in the 'Bulletin' of the Geographical Society of Paris,* and by M. Werne in a memoir printed in the 'Allgemeine Preussische Zeitung,'† and reprinted by Professor Ritter in his 'Blick in das Nil-Quellland.‡

From these accounts, and from the map which accompanies that of M. d'Arnaud, we collect that from the junction of the Baḥr el Azrek at Khartúm to about the 14th parallel of N. lat., the direction of the Baḥr el Abyaḍ is about W.S.W.; above that point it continues almost S. to about 11° N. lat.; thence its general direction is to the S. W.; till in about 9° 10' it becomes due W.

According to our system of investigation, we must here quit the main stream, in order to consider the tributaries which it receives on its right bank between the parallels of 11° and 9° N. They are three, named respectively in M. d'Arnaud's map Pipar, Djal, and Sobát (Saubat). The first two are marked in the map as branches of the Sobát, and as forming with that river at its confluence with the Nile a delta of upwards of 100 miles each way; and, in conformity with this, M. d'Arnaud states that the Sobát "a encore deux dérivations assez considérables plus au nord."§ Were it not for this, I should be inclined to regard these two rivers as having no connexion with the Sobát above, but as being separate streams of no very long course, and probably running only during the rainy season. The Sobát itself was ascended by the second expedition for upwards of 80 miles in a direction about E.S.E., and it is described as contributing to the Nile nearly a moiety of its waters.|| It is called by the natives on its banks Téli and Tá, and by the Arabs Baḥr el Makádaḥ, or the river of *Habesh*.¶

The most recent traveller in the countries south of Sennár is M. Castelli, who, in a letter from Dr. Perron of Cairo, dated the 3rd of September, 1845,** is stated to have penetrated, in com-

* Second Series, vol. xviii. p. 367, *sqq.*; vol. xix. p. 89, *sqq.*, and p. 445.

† No. 204, of 24th July, 1844.

‡ P. 42, *sqq.* See also 'Monatsberichte,' N.S., vol. ii. p. 16. *sqq.*

§ 'Bulletin,' vol. xix. p. 90.

|| Ibid.

¶ Werne, in 'Blick in das Nil-Quellland,' p. 47. By Selím Binbáshí, the commander of the first expedition, this river is named Baḥr el Sebót, or Sebát, and Chelfyh, Telky, or Telkhy ('Bulletin,' 2nd Series, vol. xviii. pp. 26, 171). This last

is evidently an error in writing ق for ج; since not only M. Werne, but also M. Thibaut, who likewise accompanied the expedition, has Tel'í (Ibid., p. 382). M. Thibaut attributes further to the Sobát the names of Blue River and Kety, which latter designation is given by M. Werne to the main stream of the Baḥr el Abyaḍ. The officers of the first expedition describe the waters of the Solát as of a reddish colour (rougeâtre), which however they go on to say is but little different from that of the White River itself (Ibid., p. 171).

As to the application of the terms "Makádaḥ" and "Habesh," see the note in page 2 of the present Essay.

** 'Bulletin,' 3rd Series, vol. iv. p. 65, *sq.*; 'Nouvelles Annales des Voyages,' 1845, vol. iv. p. 138.

pany with a body of Egyptian troops, as far as "the Sobát, at near the point where the Pipar and Sobát present a bifurcation;" consequently to about 9° N. lat. and 33° E. long. Here "the Sobát was crossed and then recrossed; and on the further march, *which was more directly towards the E.*, they had to cross the Sobát a good number of times, and likewise the Túmat." After a very winding road, the army reached Mount Dul, in about $8^{\circ} 35'$ N. lat., and about $35^{\circ} 10'$ E. long.; and from thence it returned to its point of departure.

It is to be regretted that the account of this journey hitherto furnished is so concise. Still, sufficient is stated to show that the "Sobát" which M. Castelli reached cannot be the upper course of "the river of Hábesb," which was ascended by M. d'Arnaud and his companions. For it is not to be conceived that the immense stream, which is described by the latter as "contributing to the Nile nearly a moiety of its waters," should have received no further notice from the former traveller than that it was "*crossed* a good number of times;" still less that a river which is stated to form a delta of 100 miles in extent, should have its source within another hundred miles of the apex of that delta: independently of which, we have (as will next be seen) evidence showing the position of the main stream *in a totally different direction*, namely, in the S.E. The reasonable conclusion is, that the Sobát of M. Castelli is some minor tributary of the Sobát or Téfi of the Egyptian expedition, which, among the Dinkas, has given its name to its recipient. The sources of this tributary are manifestly in the vicinity of those of the Yabús and Túmat (which latter river that traveller in like manner repeatedly crossed), that is to say, but approximately only, in about $9^{\circ} 30'$ N. lat. and 34° E. long.

Of the upper course of the main stream of the Sobát or Téfi, we are not furnished with any further particulars by the officers of the Egyptian expeditions. It is to other sources that we must look for this information. And first we are told by M. Russegger* that three days to the S. of Singe, which place that traveller afterwards found to be in $10^{\circ} 16'$ N. lat., is Fadassi on the left bank of the Yabús; and three days beyond that is Lerha, the residence of the Galla chief Werkholtello. In this same direction Cailliaud places Gambél and Dallalte, where there are copper-mines.† In my MS. notes‡ I find it recorded, that to the W. of the Dábana, a principal tributary of the Dedhésa, there is a Galla district called *Gambél*, the chief of which is *Wakontále*,

* In the pamphlet already adverted to, in page 32. note.

† Vol. iii. p. 47.

‡ In my note-book I have a mass of information, collected from various Abessinians and Gallas in Gódjam and elsewhere, which, from its want of connexion, cannot readily be made available. But it may become so from time to time, as in the present instance with respect to the Galla chief Wakontále.

surnamed from his horse, Abba-Loko—"the rider of the Lizard (?)"—who some time since fought with the Arabs and conquered them. This chief is evidently the Werkholtello (according to the German orthography, Wercholtello) of Russegger; the position of whose residence, *Lerha in Gambél*, may, from a comparison of the data thus furnished by that traveller, Cailliaud, and myself, be determined with sufficient accuracy. Russegger goes on to say, that after three days' journey further S. from Lerha, over a level country, a large river occurs, which is called by the Arab slave-dealers who travel thither *Bahr el Abyad*, or the White River. The sources of this river are said to be in the high land of the Gallas, and its course from E. to W. as far as the country of the Dinčas, where it turns northwards and descends to Khartúm.*

Knowing as we do, that, to the S. of the junction of the Sobát with the direct stream of the Bahr el Abyad, the latter river was ascended by the Egyptian expeditions to beyond the 5th parallel of N. lat., and that in no portion of their route above that junction did they pass to the east of the 32nd meridian E. of Greenwich, it is a mere truism to say that we shall not find the *Bahr el Abyad* anywhere to the N. or E. of those limits: consequently, the river in 8° N. lat., and between 34° and 35° E. long., designated "*Bahr el Abyad*" by M. Russegger's informants, can by no possibility be the river of that name which was ascended by MM. d'Arnaud and Werne.

Still, Russegger's information is too precise and too positive to be rejected, especially as the position of the residence of the Galla chief Wakontáde, the last stage on the road to the river called Bahr el Abyad, is, as it has been seen, determined from a totally independent source: in addition to which, my memoir of the 23rd November, 1843,† contains positive evidence of the existence, in the direction thus attributed to the "*Bahr el Abyad*," of the *Báro*,—"a very large river," "much larger than the Abái,"—to which the Gallas of Gúderu are in the habit of proceeding in their military and elephant-hunting expeditions, "the distance gone by them being 14, others said 16 or 17 days on horseback." Now, 300 miles (15 days at 20 miles *per diem*) in a direction nearly W. from Gúderu, brings us to the "plaine couverte de hautes graminées et où paissent de nombreux troupeaux d'éléphants" of d'Arnaud's map, through which the *Sobát* has its course. Hence there can be no difficulty in identifying the *Báro* with the Sobát, Téli, Tá, Bahr el Makádah, or

* See, to the same effect, Russegger's 'Reise, &c.,' vol. ii. part ii. p. 88. In the extract from M. Russegger's pamphlet, the distance from Lerha to the "*Bahr el Abyad*" is stated to be only three days' journey: in his 'Travels' it is five.

† 'Journal R. G. S.,' vol. xiii. p. 268.

River of Hábesb, of the Egyptian expeditions, and with the "Bahr el Abyad" of Russegger. A letter from M. d'Abbadie, dated A'dowa, the 14th of October, 1844, is precisely to the same effect: "*Le Saubat de M. d'Arnaud, est évidemment mon Baro, et ses Barry sont mes Souro, pasteurs qui confinent à Kafa.*"* In this latter particular, however, that traveller is in error. The country of the Behrs or Barry does not confine on Káffa, but is 300 miles distant from Bónga, the capital of that kingdom; while, according to my informant Omar ibn Nedjât, the country of Súro is only two days' journey to the W. of Bónga.† It is to be remarked, in further confirmation of the identity of the Báro with the Sobát or Téli, that in the same way as, according to the information obtained by me, the valley of the Báro is "inhabited by Shánkallas or negroes, but beyond them to the W. are other tribes of Gallas speaking a different language, or at least a different dialect;"‡ so, in M. d'Arnaud's map, the "Pays des Diñka," the well-known negro race dwelling between the Blue and White Rivers, is shown as extending southwards as far as the Sobát, while beyond that river to the W. begins the country of the Nuwérs (Nouerres), a people (according to M. Thibaut, who likewise accompanied the expedition) "whose complexion inclines towards red, and whose hair is not woolly;"§ that is to say, a race distinct from their negro neighbours, and apparently of cognate origin with the inhabitants of the Abessinian plateau.|| It is true that in M. d'Arnaud's table of the several tribes inhabiting the valley of the Bahr el Abyád, the Nuwérs are classed with "the Dinkas and the several other tribes speaking nearly the same language;"¶ and M. Werne says, in like manner, that "the language of the Dinkas who inhabit the right bank of the Bahr el Abyád, as far as the Sobát, extends, *with certain modifications*, as far up the former river as the country of the Chirs (Tshierr)."* But one of these "modifications" may possibly be, that the Nuwérs, whose origin, as a red race, is manifestly different from that of the Dinká negroes, have a language of their own distinct from that of their neighbours, though they may be familiar with the latter also, and may use it in their communications with strangers.

Though the Báro is thus shown to be a continuation of the

* 'Nouvelles Annales des Voyages,' 1845, vol. i. p. 263.

† 'Journal R. G. S.,' vol. xiii. p. 268.

‡ Ibid.

§ "Par 5° latitude N. . . . commence le pays des Nouers . . . la couleur de leur peau tire sur le rouge; les cheveux ne sont pas crépus."—'Bulletin,' 2nd Series, vol. xviii. p. 382.

|| It would be important to ascertain whether the language of these red people, the Nuwérs, is cognate with that of the Gallas, or with that of the Góngas, the earlier inhabitants of the whole of the table-land from beyond Káffa to the Abáí. If the statement of my Gúderu informants is to be taken literally, the Nuwérs are a tribe of Gallas,

¶ 'Bulletin,' 2nd Series, vol. xix. pp. 91, 93.

** 'Blick in das Nil-Quellland,' p. 48.

Sobát or Téli of M. d'Arnaud, it does not necessarily follow that it is *alone* the upper course of that river. By persons reaching its right bank from the N., like M. Russegger's Arab slave-dealers of Sennár and my Galla merchants and elephant-hunters of Gúderu, it would be regarded as the upper portion of the main stream, just as the Sobát of M. Castelli is considered as such by the Dinkas; since, in each case, their information does not extend beyond it. But, by persons acquainted with the countries and rivers lying further to the S. and E., the Báro is known to be a tributary of the Gódjeb; and as it will be shown that it is this latter river which is really the upper course or main stream of the Sobát or Téli, it will follow that the Báro, like the Sobát of the Dinkas, is only a branch of the principal stream on its right bank, whatever may be the correct name of that principal stream.

Of all the rivers of Eastern Africa, except the Nile itself, the *Gódjeb* is that which during the last few years has attracted the most attention. Before entering upon its particular consideration, it may, therefore, be not uninteresting to repeat briefly the steps by which a knowledge of this river has been acquired. As early as May, 1841, I sent home from Shoa certain particulars respecting the Gódjeb, which had been obtained by Dr. Krapf and myself from a slave of the king, named Dilbo. He described it as being about 3 miles across, and as flowing between Enárea and Káffa "to the country of the Arabs;"* by which expression he was understood by Dr. Krapf and myself to mean, that it reached the shores of the Indian Ocean frequented by the Arabs. I was till recently under the impression that this was the first occasion on which even *the name* of this river had been communicated to the civilized world; but on looking through the volumes of the 'Bulletin' of the Geographical Society of Paris, I find that as early as the 16th of August, 1839, M. Antoine d'Abbadie, in a memoir read before that Society, mentions his having been informed by a merchant of Dérita named Wárkie, whom he had met with at Maşówah on his first visit to Abessinia, that "la rivière *Goudjoub* coule par Kaffa et Œenärýa dans l'Abbây,"† but without stating any other particulars respecting it or directing any special notice to it.

• In a very copious memoir communicated by Dr. Krapf to the Egyptian Society of Cairo in August, 1842, and published (in a translation) in the 'Monatsberichte' of the Geographical Society of Berlin,‡ many additional details obtained by him from Dilbo are given respecting the Gódjeb—called by him "Goshop," or "Gochob,"—and the neighbouring countries; and the same par-

* See 'Journal R. G. S.,' vol. xii. p. 57; and 'A Statement of Facts, &c.,' p. 7.

† 'Bulletin,' 2nd Series, vol. xii. p. 189. ‡ Part iv. (1842-3), p. 172, *sqq.*

ticulars, with little modification, are likewise inserted by Sir William C. Harris, in his 'Highlands of Æthiopia;,'* the river, which is called by him "*Gochob*," after Dr. Krapf's German pronunciation, being, in accordance with the views regarding Dilbo's statement originally entertained by Dr. Krapf and myself, made to flow into the Indian Ocean.

On my arrival in Gódljam, I soon discovered, that, if Dilbo really knew the true course of the Gódjeb (which I much doubt), his "country of the Arabs" must mean, not the shores of the Indian Ocean, but Sennár; for, from information obtained from many persons, both Abessinians and Gallas, it was made certain that it joins the "Abäi." This expression I have since found to be just as indefinite as the "Nile" and the "Bahr el Abyad" of the Arabs of Sennár, but I was not then aware of that circumstance; and having at the same time positively ascertained the existence of the western branch of the Blue River, and being misled by Mr. McQueen's statement in his 'Geographical Survey of Africa'† as to the time of the latter river's flooding in Sennár, I was induced to regard the Gódjeb as the upper course of this western branch, and so I laid it down in my map of the 6th September, 1842, of which mention has already been made.‡ Further information, however, soon convinced me that this, although an advance towards the truth, was not the truth itself; for, instead of the Gódjeb, with its tributaries the Gibbe, Báro, and Gaba, flowing, together with the Dedhésa, to the Abäi, the Dedhésa alone was found really to do so: and, accordingly, my map of the 23rd of November, 1843,§ showed this latter river to be the direct course from S. to N. of the Blue River.

The Gódjeb, on the other hand, in a most important map || drawn under the dictation of 'Omar ibn Nedját, a Mohammedan merchant of Déríta, was made to form a curve round Káffa and the adjacent countries, and to join "the Abá of Sennár."¶ That such is really the case is expressly asserted, not only by M. d'Abbadie (as we shall next proceed to show), but likewise by

* Vol. iii. *passim*.

† P. 236. See the note in page 26 of the present Essay.

‡ See page 27.

§ See page 28.

|| The value of this map is such, that it is to be regretted it was not published in the Society's 'Journal' at the same time as the memoir in which it is mentioned. It is, however, given herewith.

¶ 'Journal R. G. S.,' vol. xiii. p. 267. In my note-book I find the following note written at Wogálj near Yejúbbi, on the 20th January, 1843:—"Hádji Mohammed Núr, a merchant trading to Enárea, informs me that the Gódjeb rises on this side (i. e. to the north) of Káffa, and runs southwards; then turning round far off to the west, it comes round again northwards, and joins the *Abäi* or *Bahr el Azrek* at *Khartúm*, being in fact the *Bahr el Abyad*. He drew its course on the ground with his stick, as also that of the *Bahr el Azrek*, and spoke quite positively on the subject. He seems a very intelligent man, and has been to Egypt, Bombay, &c." I had quite overlooked this note until within the last few days.—13th February, 1847.

M. Lefebvre, who states* on the authority of a merchant of Kaffa, named Irbo, that the Gódjeb is a mile in width when it arrives in the plain country of the Shánkakas or negroes *before falling into the White River*. And the same is further virtually confirmed by M. d'Arnaud's map of the Bañr el Abyad, contained in the 'Bulletin' of the Geographical Society of Paris for February, 1843,† in which the united stream of the Gódjeb and Shoabérri (Choa-Berry) is laid down as the continuation of the main stream of the Bañr el Abyad from the extreme point reached by the Egyptian expeditions. M. d'Arnaud's authority for this I infer to be M. Blondeel van Cuelebroek, the Belgian Consul-General in Egypt, and Mr. Bell, who were in Gódjam in 1842 and left that province just as I entered it; since he states ‡ that he received some information from those gentlemen respecting the Sid' mas, that is to say, the people of Káffa, in whose country the Gódjeb rises. The mistake in this map is making the river to run south-westwards instead of north-westwards to join the Bañr el Abyad.

When my memoir of the 23rd of November, 1843, was communicated to the Royal Geographical Society, Sir William Harris and Mr. McQueen were strongly advocating the course of the Gódjeb—by them called "*Gochob*"—to the Indian Ocean, and its identity with the Jubb or Gowin; § and I was assured, on what I considered to be unquestionable authority, that it was a positive fact that *the Jubb or "Gochob" had been navigated by Europeans upwards from the sea to near Enárea*. Under these circumstances, though I had every reason to credit the accuracy of 'Omar's statements, I could not fly in the face of what was so confidently asserted to be a fact; and therefore I had no alternative but to let the question remain till it should be capable of determination on further evidence. || The appearance of that evidence was not long delayed. In February, 1844, the Jubb or Gowin was ascended by Mr. Henry C. Arc Angelo, who has published a brief account of his expedition in the 'United Service Journal' for January and February, 1845. He says:—"The river Juba is not known to the natives by the name Major Harris has given

* 'Bulletin,' 3rd Series, vol. i. p. 54.

† Second Series. vol. xix.

‡ 'Bulletin,' vol. xviii. p. 379; vol. xix. p. 445.

§ As late as May 3rd, 1844 (see 'Blackwood's Magazine' for June, 1844. vol. lv. p. 735), Mr. McQueen affirmed that the "*Gochob* . . . is called Jub by the Arabians, Gowend or Govend by the Somaui, Yumbu by the Souahilis, and Danesa by the Gallas"—"the Dedhasa (pronounced Nassal) being considered to be the same as Danesa or Danesa." (ibid., p. 734.) By this, it may be presumed, is meant not that "*Nassal*" is another name of the river, but that "*Dedhésa*," if pronounced nasally, becomes "*Danesa*." However this may be, we must question the correctness of Mr. McQueen's map of the 15th March, 1844, published at the same time, in which three distinct and separate streams—the Dedhésa, the upper course of the Blue River; the "*Góchob*" (i.e. Gódjeb), a tributary of the White River; and the Jubb or Gowin [i.e. the Wábbi-Giwéyua], which discharges itself into the Indian Ocean—are all laid down as parts of one and the same stream.

|| See on this subject 'Nouvelles Annales des Voyages,' 1846, vol. iii. p. 225, sqq.

it, viz., 'Gochob';* it is called by them Gowín or Jub, and sometimes Gunarlee,† as they say it is the principal branch of the Gunarlee. *It may be set down as an incontrovertible fact, that no Europeans have been up the river 'Gochob' or Juba, for the purpose that Major Harris mentions, viz., traffic in slaves; or indeed for any other purposes, with the exception of myself, up to February, 1841.*‡ Mr. Arc Angelo ascended the river about 220 or 240 miles, on a general bearing (as well as can be collected from his narrative, which is not so ample or definite as could have been desired) of about N.N.W.§ so that the furthest point reached by him does not go beyond about 3° 20' N. lat. and 41° 20' E. long. At this point the traveller thus describes the river:—"The current after this became stronger every mile; there was, however, plenty of water, the river rather narrow. . . . Sometimes in the day the current would be so strong that it was impossible to get 300 yards in four hours. I imagine a very small steamer would do. Some considerable distance up there are several falls, one of which was said to be a very high one."|| So far therefore from the Gowín or Jubb having been ascended *as far as Enárea*, we find that its first explorer, Mr. Arc Angelo, when at his furthest point, was still nearly 400 miles distant from that country;¶ that the river was there scarcely navigable on account of the rapidity of the current; and that it soon ceased to be so altogether. And there can be little doubt that, like the Hawásh and the Wábbi (if it be not the Wábbi itself), the Gowín or Jubb has its rise on the *easternmost* limit of the mountain-chain of Eastern Africa, which, as its declivity on that side is much shorter and more rapid than towards the N. and W., cannot give rise to streams of such magnitude as those which have their origin and course on its western flank.**

This digression concerning the Gowín [Wábbi-Giwéyna] or

* As opposed to this, it is stated by a London correspondent of M. Jomard, in a letter dated 16th November, 1844:—"I have in my hands a letter from a person . . . who has ascended the river Jub in a large canoe as far as 240 miles according to his reckoning: *he says that this river is the same as that which is called Gochob by Major Harris.*"—'Bulletin,' 3rd Series, vol. iii. p. 67.

† i.e. Ganáli, the Ganana of M. d'Abbadie in the 'Esquisse du pays de Scoumâl,' in vol. xvii. of 'Bulletin de la Société de Géographie.'—F. S.

‡ P. 128.

§ This is about the direction attributed to it, from native information, in Lieutenant Christopher's map in vol. 14, part i. of the Society's 'Journal.'

|| P. 283.

¶ According to M. d'Abbadie ('Bulletin,' 3rd Series, vol. iv. p. 231), Sákka, the capital of Enárea, is in 8° 12' 30" N. lat. and 34° 18' 36" long. E. of Paris, or 36° 38' 58" E. of Greenwich.

** Further researches have completely confirmed the opinion here expressed. *Wábbi* is not a proper name, but an appellative signifying "river." M. d'Avezac, in his 'Essai sur la géographie du pays de Scoumâl,' printed in vol. xvii. of the 'Bulletin de la Société de Géographie' (p. 109), justly surmised that such must be the case, inasmuch as the information respecting the various rivers called by that name collected by M. An-

Jubb was necessary, in order to remove from the consideration of the Gódjeb one of its main difficulties, namely, the opinion—first advanced (but soon recalled) by myself, and since so positively and repeatedly asserted by others—that it flows into the Indian Ocean.

We may now return to the investigation of the course of the Gódjeb as described by 'Omar ibn Nedjât. In the first place it must be observed, that that intelligent native does not assert this river to be "the Abá of Sennár" itself—that is to say, the Baḥr el Abyad, or main stream of the Nile,—but says that it *joins* that river beyond Siéka, a country lying a week's journey to the west of Bóna, the capital of Kaffa.* Now, if the course of the Gódjeb be carried round Káffa to the E., S., and W.; be then made to turn to the N.W. at about 80 or 100 miles—"a week's journey"—to the W. of Bóna (which city is placed by M. d'Abbadie in 7° 12' 30" N. lat. and 36° 4' long. E. of Greenwich); and be thence continued in the same direction, which is that of all the principal tributaries of the Nile which descend from the Abessinian table-land; we shall find that it, not less than the Báro (M. Russegger's "Baḥr el Abyad"), exactly coincides with the Sobát of M. d'Arnaud's map. And if, as has been stated and as will be more fully shown in the sequel, the Báro is a tributary of the Gódjeb, it will result that the latter river, and not the former, is the upper course of the Sobát or Téfi of the Egyptian expeditions.

Within the last two years letters have been received from M. Antoine d'Abbadie, communicating the important intelligence of his having penetrated S. of Gódjam as far as Enárea and Káffa. Hitherto the only particulars of his journey imparted to the public, are contained in a few letters published in the 'Athenæum,'† the 'Bulletin' of the Geographical Society of Paris,‡ the 'Nouvelles Annales des Voyages,' § and probably some other periodical pub-

toine d'Abbadie, on which information that Essay is based, could not well be applicable to a single stream. Hence, M. d'Abbadie's "Wébigi-weyna, c'est-à-dire le grand Wébi" (ibid., p. 98), which name has to be read "Wábbi-Giwéyna," is simply the river Gowín, or Jubb, ascended by Mr. Arc Angelo. M. Rochet d'Héricourt, in his 'Second Voyage au Royaume de Choa,' p. 274, mentions his having been informed that the river (Wábbi) which falls into the Indian Ocean at Juba—consequently the Wábbi-Giwéyna or Gowín—the pseudo-Gódjeb or "Gochob"—has its source in the Galla country of Korchási, situate to the south of Lake Zuwái, that is to say near the edge of the table-land; and that it passes through a large lake there. He was further informed of the river (Wábbi) of Hârrar; and being misled by the term "Wábbi," and supposing the two rivers to be but one, he in his map makes the former to go round to the north-east, before descending to the ocean, as if it were the head of the latter. But if the Wábbi of Hârrar really joins the Wábbi-Giwéyna, it must be a separate branch of that river quite distinct from the branch which has its rise in Korchási. It may, however, be a different river altogether, namely, the river Haines, of Lieut. Christopher ('Journal R. G. S.', vol. xiv. p. 96).—12th March, 1847.

* 'Journal R. G. S.' vol. xiii. p. 264. sqq. † No. 906, of March 8, 1845, p. 243.

‡ Third Series, vol. iii. pp. 52, sqq., 311, sqq.

§ For 1845, vol. i. pp. 200. sqq., 365, sqq.; vol. ii. p. 107, sqq.

lications. This journey has a claim to be regarded as one of the most important ever accomplished in Africa. It is therefore with the deepest interest that we look for full details respecting it, together with the map of the enterprising traveller's route, the sketch of which had been unfortunately left behind at Gondar, when he wrote from Masówah at the close of 1844, announcing his return from those countries so imperfectly known.

M. d'Abbadie states that he crossed the Gódjeb within 30 miles of its source,* and he entirely confirms 'Omar's statement as to the spiral course which that river takes round Káffa to join the Nile † But M. d'Abbadie goes further, and gives it as his decided opinion that *the Gódjeb is the Nile itself*. Every opinion on the subject of the geography of Eastern Africa, expressed by one who has travelled for so many years in that quarter of the globe, and who has manifested so much zeal and ability in the investigation of it, is entitled to respect. Still, if the subject be viewed in all its bearings, such an opinion will be found to be untenable. To disprove its correctness formally would only lead to needless repetition, since the arguments which it would be necessary to adduce, are to be found in their proper place in the course of the present investigation. Without pausing, therefore, to examine M. d'Abbadie's hypothesis in detail, but assuming that the identity of the Gódjeb with the Téli or Sobát, is, or at all events will be, sufficiently established in the course of these remarks, we shall proceed to the consideration of the tributaries of that river on its right bank.

The first of these is the small stream already mentioned, under the name of "Sobát," as having been reached and repeatedly crossed by M. Castelli, which has already received all the consideration of which it is susceptible. ‡

The other tributaries of the Gódjeb on its right bank, enumerated by M. d'Abbadie in the order in which they join that river from below, are the Báro, the Birbir, the Kotáda in the country of Yámbo; the Oshko (Ochko) or Baço (Baqo), a noble stream which runs through Siéka (Seka), the country of the Mashango (Machango) negroes; the Kesho (Kecho) in Súro; the Abáwa, Gúma, Hirgimo, Shácho (Chatcho), Bándja and Góra in Góbo,

* This source is placed by M. d'Abbadie ('Nouvelles Annales des Voyages,' 1845, vol. ii. p. 112) in about 7° 20' N. lat., and 1° 20' long. (estimated) W. of Sákka; consequently about 35° 20' E. of Greenwich. Its site is determined by the position, *inter alia*, of the bridge at Kángkati (Kankatti), two days' journey, or 30 miles, from its source, over which bridge that traveller crossed the river on his way from Sákka to Bóna. But, viewing the positions of those two towns, on the *direct* road between which I have always understood Kángkati to be, this latter place ought to be at least *sixty* miles from the source of the Gódjeb.

† See to the same effect the statement of Hádji Mōhammed Núr, in page 44, *note*. *

‡ See page 39, *sq*.

and the Bitino in Kullo.* In another list furnished by the same traveller,† the Birbir is placed below the Báro, in which case it might possibly be identical with the Sobát of M. Castelli.

Respecting the Báro, M. d'Abbadie remarks:‡—"This river deserves special attention, since even in Wallégga it is already as large as the Abá'i at the ford of A'muru,§ and the timid Ethiopians dare not cross it without sacrificing to the god of the river. . . . On credible testimony it is almost as large as the Gódjeb itself, where it joins the latter in the country of Yámbo." This information is entirely corroborative of that collected by myself respecting the Báro.¶ In one passage, in which the same traveller mentions the several names under which the Gódjeb passes before it merges in the Bañr el Abyaḍ, he states that it is called Báro in the lower part of its course;|| which must be understood as meaning below the confluence of the two streams. This is quite in accordance with the relation of the elephant-hunters of Gúderu, to which allusion has already been made.** And it is likewise another instance of the facility with which mistakes may arise in information respecting rivers obtained from natives. The Sidámas of Káffa call the common stream by the name of Gódjeb; but the Gallas of Gúderu know it—and probably also the Nile itself below the junction††—as the *Báro*; while among the Dinkas, whose horizon would appear to be bounded by the Sobát, the name of this petty stream usurps the place of that of the common bed of those two noble rivers!

Confining ourselves for the present to the consideration of the Báro, we find the following rivers mentioned by M. d'Abbadie as joining it on its right bank, viz., the Botor, Sor, Wichi, Gúmaro, Kónhor (Konnor), Yúbbi, Búrie (Boure), and Gába (Gábba).‡‡ Of these, the names of Búrie, Kónhor, Gúmaro, Sor, and Bótor are known to me, from my Galla itineraries, as those of *places* (which may derive their names from streams flowing by them, or *vice versâ*) lying to the north of the Báro; but the Gába alone was described to me as a river. On it there is a large market of the same name, and it runs at a short distance beyond Kúra, the residence of a principal chief of Wallégga, named Chalishóno. It has its head in the large forest in which the Gódjeb rises.

* According to M. d'Abbadie, "the Báro, which the Sidámas

* 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 114.

† *Ibid.*, vol. i. p. 365.

‡ *Ibid.*, vol. ii. p. 114.

§ *i. e.* Mélka-A'bro, the ford in Shínasha on the road between Búrie and A'muru.

¶ See page 41, *sq.*

|| 'Nouvelles Annales des Voyages,' vol. i. p. 365.

** Page 41.

• †† Under this view of the case, the tradition of the Gallas that they came from Bar-gámo—*i. e.* from *beyond the Báro*—(see 'Journal R. G. S.,' vol. xiii. p. 269), might resolve itself into the fact that their original seat was *beyond the Nile*.

‡‡ 'Nouvelles Annales des Voyages,' vol. ii. p. 114.

call Bóta, has its source near to that of the Gódjeb,"* that is to say, "in the country of Gímira, Gámaro or Gámru, on the same plateau, and at a distance of about 3 days' journey (50 miles)."[†] On its left bank, according to the same traveller, its tributaries are the Gándji, "which has its source close to the spring from which the Gódjeb itself rises," the Siria and the Bonga. "This list," he adds, "would be much larger, were we to add the sub-tributaries of the Báro."

Of the other tributaries of the Gódjeb on its right bank named by M. d'Abbadie, no details are given by him except of the Oshko or Báko (Baqo, also written Bago and Bako). The source of this river is stated to be in the centre of the great curve of the Gódjeb, at a day's journey from Bóna; and, in addition to the names above-mentioned, it is called Wosh (Woch) by the people of Gímira, and Wása by the Sidámas.[‡] This diversity of name in the various countries through which it passes, proves the Báko to be a stream of considerable magnitude. In my native itineraries, I find mention made of the "Bákko," as being a large river beyond the Báro, as far as which the Galla country known under the comprehensive title of Wallégga extends; its valley, like that of the Báro itself, being an important hunting-ground for elephants and buffaloes. Besides calling the Báko a tributary of the Gódjeb, M. d'Abbadie states that it is the name by which the principal stream itself is known to the people of Wallégga,[§] that is to say, the Gallas dwelling on its right bank. Here we have again another instance of the main stream's passing under the name of its tributary.

The close parallelism between the Bahr el Azrek, with its spiral head and its two principal tributaries on the right bank, the Dender and Ra'ad, running side by side in the same direction with it, and the Téfi or Gódjeb having the same form with similar tributaries, the Báko and Báro, is most striking; and it is a convincing proof that thus far S. the general characters of the mountain-chain of Eastern Africa remain unaltered: so that, seeing that towards the N. the Tákkazie partakes more or less of the same characters, we may be prepared to find some not dissimilar ones reproduced in the *Shoabérri* yet further to the south.

In order to complete the list of the tributaries of the Gódjeb on its right bank, it must be remarked, that, on a previous occasion, M. d'Abbadie makes mention of the Götsi|| "as a river flowing past Bóna, the capital of Káffa," which is described by him as "a very large stream, comparable with the Gódjeb, which it joins;"

* 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 114.

† Ibid., p. 112.

‡ Ibid., p. 115.

§ Ibid., p. 115.

|| 'Bulletin,' 2nd Series, vol. xix. p. 439.

but this name does not appear in that traveller's later lists drawn up after his return from Bóna. It may, however, be only another form of the name Gódjeb: 'Omar called the lower course of this river Gódje. And from a young man named Dódjamo, a native of Woráta, who was a long time a slave in Djímma-Káka and Enárea, and came afterwards to Yáush, where I knew him as a Christian by the name of Wálda Mikael, I obtained the names and approximate courses of two rivers flowing through his native country, called Zígena and Wáto, which were stated by him to join the Gódjeb on its right bank. These rivers are shown in my map of the 23rd of November, 1843, and are probably identical with some of those enumerated by M. d'Abbadie.

The Gódjeb was described to me as rising in an immense forest extending between Wallégga, Gúma, Géra, and Káffa, through which the caravans going to the last-named country must pass. This forest is impervious to the rays of the sun, which is not visible to travellers for four or five successive days. In it and in its immediate vicinity are found the heads of the Báro, Gába, Gíbbe, and Dedhésa, as well as that of the Gódjeb; and at that part of the course of this latter river, where it is crossed on one of the caravan-routes between Gúma and Káffa, it is but a small brook.* The head of the Gódjeb is placed by M. d'Abbadie in about 7° 20' N. lat., and 1° 20' long. W. of Sákka; within 10 miles of latitude and 5 miles of longitude of the spot where it is laid down in my map of the 23rd of November, 1843. It was described to M. d'Abbadie as being at a place called Gandjès, between two high hills (hautes collines) called Boshi and Doshi (Bochi and Dochi), in the country of Gímiru, Gámaro, or Gámru.†

With reference to this latter point, that traveller remarks: † "Now, it is an historical fact, that, prior to the sixteenth century, the Arabs were in constant communication with Hárarge and Dáwaro. It was probably from this quarter that they obtained their information respecting the source of the White River; and seeing the two mountains of Gandjès, they may have called them the mountains of the Gámru (Djabal el Qamr). But the Arabic word *qamr*, or *qamr* [Kámar], signifies 'moon,' and hence has arisen the curious error of 'the Mountains of the Moon.'" We will not stop here to discuss the position of Gímira, which country is placed by 'Omar ibn Nedjât to the S. of Káffa; whereas, according to M. d'Abbadie, it must be towards the N., in order that the source of the Gódjeb should be found within it. But we object altogether to his *derivation* of the name "Mountains of the Moon." If, as he states, the first mention of these mountains had been made by the

* 'Journal R. G. S.,' vol. xiii, p. 255.

† 'Nouvelles Annales des Voyages,' vol. ii, p. 112.

† Ibid., p. 113.

Arabs, who obtained their knowledge of them prior to the *sixteenth* century from native sources, it will not be denied that they might have made the expression *the mountains of Gímira*, or *Gámru*, significant in their own language as *Djebel el Kámar* (جبل القمر).

But the fact is that the "Mountains of the Moon" were already known to Ptolemy in the commencement of the *second* century by the name of τὸ τῆς Σελήνης ὄρος.* If, then, as M. d'Abbadie contends, the expression "the mountains of Gímira" was first made significant by *the Arabs*, it would follow that the geographer of Alexandria derived his *Greek* name through the Arabic language, and his knowledge of the upper course of the Nile from the Arabs themselves. The correctness of this hypothesis will, of course, not be insisted on. If, on the other hand, it be admitted—and it is all but universally admitted—that the Arabian geographers acquired their first geographical notions respecting the interior of Africa from Ptolemy, including that of the upper course of the Nile and its origin in the "Mountains of the Moon," we can perfectly understand how the Greek name τὸ τῆς Σελήνης ὄρος should have been translated by them جبل القمر *Djebel el KĀ'MAR*, in the same way as it is rendered "Mountains of the Moon" in all European languages.

It is true that the Arabian writers have attached a different meaning to the word قمر, by reading it *Komr* as if pointed with a *damma*, instead of *Kámar* with a *fathá*; and they have given certain fanciful reasons for the name *Komr*, which are cited by De Sacy in his version of 'Abdu'-l Latíf's 'Description of Egypt.'† But, in the derivation of the names of places, it

* Lib. iv. cap. ix. p. 115 (edit. Bertii, p. 131).

† "On traduit ordinairement le nom de ces montagnes par *les monts de la Lune*, et j'ai suivi cet usage. Je ne sais si les Arabes ont pris originairement cette dénomination de Ptolémée, qui place les sources du Nil bien au-delà de l'équateur, dans les hautes montagnes de la Lune, *σελήνης ὄρος*. On peut croire qu'ils entendent effectivement aujourd'hui le mot قمر, nom qu'ils donnent à cette montagne, dans le sens de *la lune*, en le prononçant *Kamar*, puisque Léon Africain^a dit du Nil: *Alcuni vogliono ch'ei nasca dai monti della Luna*. Je ne crois pas cependant que ç'ait été l'opinion des anciens écrivains Arabes, qui prononcent ce mot قمر *Komr*. Maķirzi,^b qui détermine positivement cette prononciation, ainsi que l'auteur du *Kamous*, dit que dans la mer de Zanguebar il y a une grande île dont la longueur est de quatre mois de marche sur une largeur de vingt journées, et qui fait face à l'île de Ceylan; que parmi les diverses contrées que renferme cette île, il y en a une nommée *Komriyya* قمرية, d'où l'oiseau nommé *Komri* قمرى prend son nom. Il ajoute que cette île se trouvant trop petite

^a Descr. dell' Africa, dans la collection de Ramusio, t. i. fol. 98, B.

^b Mau. Ar. de la Bibl. imp. n^o 682, fol. 2^u, recto.

is a rule of sound etymology to consider, that, whenever a story is attached to a name for the purpose of accounting for its origin, the story, instead of having given rise to the name, has, on the contrary, sprung out of it through ignorance of its real import.* The simplest and most natural derivation of a name will generally be found to be the correct one, and we should doubtless be erring were we to look elsewhere than to the Greek of Ptolemy for a derivation of the Arabic name. The tales of the Arabian writers may be regarded merely as attempts to *explain* a word, of the origin and real meaning of which they had lost the knowledge.

The Greek derivation of the name being then admitted, we have this alternative as to its origin: either there is some country of which the native name bears a resemblance to the Greek word *Selene*, or else the "Mountains of the Moon" derive their title from some country of which the native name is in itself significant.†

That a country, whose native name is thus significant, does actually exist, and that the Nile has its rise in that country, will be shown in the sequel. For the present we must confine ourselves to the consideration of the Gódjeb and its tributaries.

Proceeding next down the left bank of that river, M. d'Abbadie

pour son immense population, plusieurs de ses habitants passèrent sur le continent, et qu'ils y formèrent divers établissemens sur les côtes au pied de la montagne qui prit

d'eux le nom qu'elle porte de montagne de *Komr*, جبل القمر. Aboulfêda^c rejette positivement l'opinion de ceux qui prononcent *Kamar*, et qui dérivent ce nom de celui

de la lune. Comme le mot *Komr* est le pluriel de *قمر*, qui signifie un objet d'une couleur verdâtre, ou d'un blanc sale, suivant l'auteur du *Kamous*, il paraît que quelques écrivains ont cru que cette montagne tirait son nom de sa couleur. D'autres semblent avoir voulu réunir ces deux étymologies, en attribuant à cette montagne des couleurs qu'elle doit, suivant eux, aux diverses phases de la lune."—"Relation de l'Egypte, par Abd-Allatif" (4to. Paris, 1810), p. 7, sqq.

* There would be no difficulty in citing numerous examples of this, but a single one may be given, as being perfectly analogous to the present case. Mr. W. J. Hamilton, in his 'Researches in Asia Minor,' vol. ii. p. 103, sq., informs us that the name *Balkiz*, attached to certain ruins, is supposed by the natives to be composed of the words *Bâl*, "honey," and *Kiz*, "girl," and a tale is told, in consequence, about a beautiful girl, the daughter of a king, who was the loveliest of her time, and as sweet as honey. But, as Mr. Hamilton justly remarks, the word is nothing more than *bala* = *παλαιά*, "old," and *kiz* corrupted from *Kυζικος*—that is to say "Ancient Cyzicus!"

[*Balkiz*, "honey-girl," cannot be confounded with *Balkis*, the queen of Sabá; though both are sounded nearly alike in Turkish, as the final *z* has the sound of *s*.—F. S.]

† In this latter case it might even be that the Arabs, from having communication with the inhabitants of that country, were led to translate the name directly, and not through the intervention of the Greek.

^c Büsching's Magazin für die neue Hist. und Geog., t. iv. p. 175.

^d Ibid.

^e Not. et Extr. des Man., t. ii. p. 155.

enumerates* the Náso in Géra; the Búru in Djimma; the Kásaro, called Gibbe by the Gallas, which separates Gáro from Djimma-Káka; a second Gibbe, which, rising in Sibú, skirts the eastern frontier of Yámma or Yángaro (Yangara), and joins the Borara; the Wálga and the Borara, which collect the waters of Gurágie; and others, the mention of which must be postponed till we have discussed the subject of the several rivers each of which bears the name of Gíbbé.

As it is justly remarked by M. d'Abbadie,† “the basins of the Blue and White Rivers, encroaching as they do on one another, form a very intricate hydrographical system; for the Gíbbé of Léka, rising in 9° N. lat., joins the White River [*i.e.* the Gódjeb] on its left bank in about the 7th parallel, while the Dedhésa, a tributary of the Blue River on its left bank, rises in the eighth parallel. The little kingdom of Enárea sends half of its waters to the Gíbbé and the other half to the Dedhésa.” This is literally in accordance with my map of the 23rd of November, 1843, in which the Gibbe of Sibú or of Léka‡ and the Dedhésa are laid down precisely as thus described.

The Gíbbé of Léka is further said by M. d'Abbadie to join the Borara, which, with the Wálga,§ collects the waters of Gurágie, and falls into the Gódjeb. This again is substantially in accordance with the statement of 'Omar ibn Nedjât, that “the Gódjeb and Gibbe, after uniting in Dóko with another river from I'fat, the name of which he does not know, go round westwards;” || I'fat (E'fat) being the name by which Shoa is generally known among the Mohammedan traders, and Gurágie being regarded as a province of the latter kingdom. M. Lefebvre likewise heard of this river under the name of *Gibbe*, as rising in the mountains of Agábdjai (Abeze-gaye¶), a district adjoining Gurágie; only his informant appears to have confounded it with the Gíbbé of Léka, which is crossed on the caravan-route from Báso to Enárea.**

* ‘Nouvelles Annales des Voyages,’ 1845, vol. ii. p. 114.

† Ibid., vol. i. p. 366.

‡ This Gíbbé has its rise in Sibú, and runs through Léka on its way south.

§ Whether the Wálga is a tributary to the Borara, or a separate affluent of the Gódjeb, is not clearly shown.

|| ‘Journal R. G. S.’ vol. xiii. p. 267.

¶ ‘Bulletin,’ 2nd Series, vol. xiii. p. 373.

** This traveller would seem to have received some not very intelligible information respecting the Gíbbé. In another place (‘Bulletin,’ 3rd Series, vol. i. p. 53, *sq.*) he says that this river, after passing between Kaffa and Djimma, runs through the countries of Nónno, Bitouène [*i.e.* “and Bótor” in Amharic], Amayane [*i.e.* “and Amáya”], Djándjaro, Agábdjane [*i.e.* “and Agábdjai”], Adiya, and Markò; and that then it goes to the south, and not westwards to join the Nile. But, from the now well known positions of all those countries (except “Markò”), it is impossible for any river running to the south to have its course through them after passing between Kaffa and Djimma. And further, as according to the statement of M. Lefebvre’s informant Irbo, a native of Kaffa (ibid.), the Gódjeb, which river flows westwards to the Nile, is joined by another river coming from the east, it is manifest that no river, such as

So far, therefore, as concerns the Gíbbe of Léka and the river of Gurágie, whether the name of the latter be Borara or Gíbbe, all appears to be quite clear. But with respect to the Kúsaro-Gíbbe the case is different. This river is described by M. d'Abbadie as being totally distinct from the united stream of the other rivers of the same name, and as having its *separate* course to the Gódjeb between Gáro—which country, according to that traveller, is identical with the Bósham or Bósha of the Portuguese—and Djímma-Káka: in other words, it is made by him to run *from N. to S.* on the W. of Yángaro or Djándjaro, and to join the Gódjeb towards the S.W. of that country; while the Gíbbe of Léka and the Borara of Gurágie fall into the latter river on the opposite side of the same country.

That this is really M. d'Abbadie's meaning will be rendered manifest by what he says in a letter to the editor of the 'Athenæum,'* namely: "According to my informers, the country called Janjāro [Djándjaro] by the Gallas, and Yamma, or Yángara, by its inhabitants from the names of its two principal tribes, is bounded on the E. by the Gíbbe of Léka, which joins the Borara, an affluent of the White Nile [*i. e.* the Gódjeb]; on the west, by a small stream in a desert country east of Bósha, which is thus, like the Yamma, comprised in the fork of the two Gibbes; *for the second river of this name, identical with the Kúsaro of the Sidámas, joins the Gódjeb on the W. and S.W. of Bósha.*" And in another place he says,† "*the Zébé is my Gíbbe or Kúsaro*, an affluent of the Gódjeb or Uma;" of course alluding to the *Zebeé* of Fernandes. That Father, however, expressly tells us‡ that the *Zebeé* was *twice* crossed by him; the first time to the *west* of Djándjaro (Gingiro) in the position of M. d'Abbadie's Kúsaro-Gíbbe, and the second time to the *east* of that country in the position of the Gíbbe of Léka; thus making what this traveller describes as two separate rivers to be but parts of one continuous stream.

In order to show more distinctly the discordance between the statements of the two travellers, it is necessary here to introduce an analysis of Fernandes's journey from Enárea to Kambwát (Cambate), on which he twice crossed the *Zebeé* as above mentioned. He says, namely,§ that after leaving the court of the

M. Lefebvre's alleged Gíbbe, could run *from north to south* through any of the countries mentioned by him, without having its progress southwards effectually stopped by the one or the other of those two rivers, and its waters carried to the Nile along with those of its recipient. And quite in accordance with this is the statement of my intelligent informant 'Omar ibn Nedjât, as to the fact of the union of the Gíbbe with the Gódjeb and with this other river from the east. See also his Map given herewith.

* No. 906, of March 8th, 1845, p. 243.

† 'Nouvelles Annales des Voyages,' 1845, vol. i. p. 263.

‡ Tellez, p. 318, sq.

§ Ibid., p. 317, sqq.

king of Enárea (which, as it lay almost due S. of the point where he crossed the Abáí at Minà, must have been far to the W. of Sákka, the present Galla capital), he and his party travelled eastwards one day, when they obtained an escort, and then *four long days'* journey further, always in the same direction, till they came to the eastern confines of Enárea. *A long, steep, and difficult descent into the valley of the Zebée brought them to that river,* which is described as containing a greater body of water than the Abáí; as being, at the spot where they crossed it, confined between steep rocks; and as running with great violence and noise, most terrific to the travellers. But much more so was the bridge by which they had to cross the river, which was merely a beam of wood, long enough to reach across the stream from the one rock to the other. From the similarity of this passage of the Zebée to that of the Abáí at the north-eastern extremity of the peninsula of Gódjam, where the two bridges are erected over it,* it is evident that where Fernandes crossed the former river it has just reached the bottom of its great fall, or rather succession of falls, from the general level of the table-land into the deep ravine common to all the principal rivers of Abessinia; since at this portion of its course it would admit of a bridge, such as is described by the traveller, but lower down, where the valley opens, the bed of the river would be much too wide for such a purpose. *Having thus crossed the Zebée for the first time,* Fernandes and his party entered the small kingdom of Yángaro or Djándjaro—called by the Portuguese Gingiro †—within which country one day's journey brought them to the capital. After a stay of some time there, they proceeded on their journey eastwards, *taking with them people to assist them in again passing the Zebée on their way to Kambwát (Cambate).‡* On the first day's journey *they came a second time to that river,* which was here much larger, and had to be crossed by means of a curious raft balanced on an inflated cowhide.

According to this narrative, the Zebée must necessarily form a curve round the N. of Yángaro, as it is usually shown to do in our maps; and that it really does so is expressly asserted by Tellez on the authority of Fernandes and others,§ and likewise by Abba

* See 'Journal R. G. S.,' vol. xiv. pp. 28, 46, 48.

† As to the various names by which this country is called, see page 19, *note*.

‡ Tellez, p. 319.

§ Porém porque todos esperam algũa noticia d'aquellas regioens, em que se entra de novo, e este Reyno de Gingiró tem algũas cousas muy estranhas, quero as aqui referir, da maneyra que as contou o Padre Antonio Fernandes, varãm de grandissima verdade, com outras pessoas de credito, *que com seus olhos as viram.* O Rio Zebée de que falamos no capitulo passado, *dá quasi hũa volta a todo este Reyno, deixando o feyto hũa como peninsula* (como se pôde ver no nosso mappa,) e d'ali encaminha sua corrente a desagoar pera a parte da costa de Melinde."—p. 320. And again: "He tambem outro rio muyto celebre chamado Zebée, do qual dizem ser ainda mayor, e mays caudaloso

Gregorius, the intelligent Abessinian instructor of the learned Job Ludolf.* The latter states that the Zebéé rises in *Enárea*; but this is only a comprehensive designation of the entire country to the S. of the Abáí, as may be proved by numerous instances.† The Jesuit Missionary, on the other hand, describes the position of its source much more definitely. He says that it rises in the country of *Bósha* (Boxa) in the kingdom of *Enárea* (this name being used by him generically in the same way as it is by Gregorius); that it runs a few leagues to the W., then turns northwards, and goes round *Yángaro* (Gingiro), of which it makes a sort of peninsula: and that it then turns southwards, and is said by some persons to be the same river as that which enters the ocean at *Mónbasah*.‡

The course of the Zebéé is here described so distinctly, that we can scarcely understand how Fernandes should, by any possibility, have been mistaken. And yet he must have been so, if the fact is that the *Kúsaro* or *Gíbbe* of *Bósha* flows from N. to S. on the western limit of that country and of *Yángaro*, as it is made to do by M. d'Abbadie, when he states that those two countries are "comprised in the fork of the two Gibbes," and that the *Kúsaro-Gíbbe* "joins the *Gódjeb* on the W. and S.W. of *Bósha*." Under these circumstances we are bound to defer to the authority of the Portuguese Missionary in preference to that of the French traveller; since the former states the result of his personal knowledge as an eye-witness, whereas the latter, though he resided several months in *Enárea* and went from that country further S. into *Káffa*, does not appear to have visited *Yángaro* and its river, the *Kúsaro-Gíbbe*.

The native information collected by myself is, besides, much

que o mesmo Nilo [Abáí], nasce em hua terra a quem chamam Boxa no Reyno de Nareá, que he o mays Austral, do qual faleremos a diante; começa o seu curso pera o Occidente, mas a poucas legoas vira pera o Norte, e vay dando volta ao Reyno de Gingiró, fazendo quasi peninsula, como o Nilo faz ao Reyno de Gajam; depoy que se retira deste Reyno, toma su corrente pero o Sul, et dizem alguns que este he o que vay sahir em Mombaça."—p. 21, sq.

* "De fluminibus, quæ vicinum Oceanum intrant, Gregorius plura non narrant quàm supra retulimus Zebæus in Enarea ortus, et finitimum Regnum Zendjero instar Nili, in modum peninsulae ambiens, in meridiem decurrit, et juxta Mombacam mari Indico misceri creditur."—"Historia Æthiopica," lib. i. cap. 3.

† See especially Fernandes, in page 24 of the present Essay. M. Rochet d'Héricourt, when at Túti (Touthé), near the source of the Hawásh, thus expresses himself:—"Je m'étais tourné vers une chaîne de montagnes où commence le vaste plateau qui forme une des plus riches provinces de l'ancienne Abyssinie, et qui est aujourd'hui occupé par les Galla, le plateau d'Anaria; j'en regardais les croupes bleuâtres qui courent de l'occident au midi."—"Second Voyage au Royaume de Choa," p. 190, sq. This is evidently not *Enárea Proper*, but only those portions of the Galla country to the W. and S.W. of *Shoa*, which are known in *Gódjam* by the names of *Miécha*, *Gandéberat*, *Chélea*, *Wóreb*, &c.—9th March, 1847.

‡ *Mombasah* (*Idiisi*).—F. S.

more in accordance with the statements of Fernandes and Gregorius, than with that of M. d'Abbadie. The general result of this information is, that (independently of the river of Gurágie) there are, in addition to the Gíbbé of Léka, *two* other streams of the same name, both of which run westwards to join the Gíbbé of Léka, as they are in a general way shown to do in my map of the 23rd November, 1843. The one of these rivers is within the modern kingdom of Enárea, and the other in the adjoining kingdom of Djímma-Káka, both of which kingdoms are portions of the country formerly included under the comprehensive name of Enárea. In order to avoid confusion, we shall designate the Enárea of the present day by the name of Enárea Proper.

With respect to the Gíbbé of Djímma, I have a very precise note of a conversation with Dódjamo, the native of Worátta already mentioned,* when he informed me that this river runs between Báddi and Káka in Djímma, *in the high plain country*, just as—only much larger than—the Yéda between Yejúbbi and Yáush,† the cattle of the two districts feeding on its banks. This description is only applicable to the *upper* course of the stream over the level table-land, before it begins to fall into the valley where it was crossed by Fernandes for the first time; and as Djímma-Káka lies to the south of Enárea Proper, this evidence is strongly corroborative of the fact that the Gíbbé of the former country—M. d'Abbadie's Kúsaro—runs from S. to N., and not in the opposite direction.

And as regards the Gíbbé of Enárea Proper, its head was described to me by several persons as being situate in the extensive forest to the W. of that kingdom, in which so many of the principal rivers of this portion of the table-land have their origin. Dódjamo further stated that its course lies between Sákka and Sása, formerly the capital of the late king Bófo, surnamed Abba Gómhol, and that *in its valley* are the coffee woods which supply the market of Sákka; these woods lying so close to that town, that the female slaves of the king go from thence to get in the crop, setting off in the morning and returning loaded in the evening.‡

It must be distinctly understood, that, for thus laying down *three* rivers of the name of Gíbbé (exclusively of the Borara of Gurágie, to which M. Lefebvre attributes the like name), we have the authority not merely of 'Omar ibn Nedjât and Dódjamo, but likewise of several other natives, as well as that of M. d'Abbadie

* Page 51.

† This comparison will be better appreciated, when it is explained that our conversation took place at Yáush.

‡ 'Journal R. G. S.,' vol. xiii. p. 257, *sq.*

himself, who states that "the Göbé (Gíbbe) has *three* sources, *two of which are in Enárea*."*

In my map of the 23rd November, 1843, following that of 'Omar ibn Nedjât too closely—for, from the rough way in which the latter map was drawn,† it makes no pretensions to strict accuracy—the Gíbbe of Enárea Proper and the Gíbbe of Djímma are both laid down as running throughout their respective courses from W. to E.; and they are further made to join the Gíbbe of Léka independently of each other, though close together. But, on a further consideration of the subject, and having especial regard to the narrative of Fernandes as well as to Dódjamo's information, I am induced to regard myself as having been in error in this particular; inasmuch as the river of Djímma-Káka should be laid down as running from S. to N. before taking its course from W. to E., and should be shown as being joined by the Gíbbe of Enárea Proper before uniting with the Gíbbe of Léka.‡ The probable result therefore, after weighing all the evidence, is that the Gíbbe of Enárea Proper rises in the west of that country, and runs eastwards between Sákká and Sáfa to join the Kúsaro or Gíbbe of Djímma. This latter river, however—being the Zebeé of Fernandes—rises in Bósha in the S. of Yángaro, and after a course of a few leagues towards the W., turns northwards, and runs over the level country between Káka and Báddi in Djímma: then, beginning to fall, as is the case with all the principal rivers of the Abessinian plateau, and being joined by the other stream of the same name from the W., it skirts Enárea Proper to the S.E. or E., in a valley commencing with a deep narrow fissure and gradually opening to the extent of several miles, towards the upper end of which valley Fernandes crossed it for the first time on his way eastwards into Yángaro; next, bending its course eastwards, it passes on to the N. of the latter country, where it unites with the Gíbbe of Léka coming from the N.W., and the Borara (Gibbe?) of Gurágie from the N.E. The river, being now vastly increased in size, continues onwards to the S., skirting Yángaro on the E., where it was crossed the second time by the Jesuit Missionary on his road further

* 'Bulletin,' 2nd Series, vol. xix. p. 439.

† See 'Journal R. G. S.,' vol. xiii. p. 255.

‡ According to information furnished to M. d'Abbadie on his first visit to Abessinia, "Enárea is situate at the confluence of two rivers, the Gibe and the Dibi."—'Bulletin,' 2nd Series, vol. xii. p. 190. The same traveller says, in a letter dated from Sakka itself, 16th Sept. 1845, "The houses of Sákká are scattered over the right bank of the Walmái (Oulmay), quite a little stream, which falls into the Gíbbe, the second of that name, which joins the Gíbbe of Sibú. The river thus increased in size skirts Djándjaro, and unites first with the Borara coming from Agábdjai, and afterwards with the Gódjeb, which latter appears to take subsequently the name of Omo—called U'ma by the people of Woráttá."—Ibid., 3rd Series, vol. iii. p. 56.

eastwards into Kambwát or Adíya,* the southernmost province of the ancient Ethiopian Empire.

That, at the place where the Zebeé was crossed the second time by Fernandes, it had already been joined by the Borara of Gurágie, must be inferred, not merely from its greatly increased size, but likewise from the fact that Fernandes makes no mention of his having crossed any other large river on his way further eastwards, which he must otherwise have done, as his road through Kambwát or Adíya took him into the immediate vicinity of Gurágie. This latter country lay, in fact, close upon his left hand as he continued his journey eastwards,† and he particularly mentions an attack made on him and his companions by a party of “five mounted *Gurá-Gués*, and other armed men on foot.”‡

Our subject does not require us to say anything further respecting the journey of Fernandes; but it may not be unimportant to remark that, after passing eastwards through Kambwát or Adíya, he came to a district called Alaba,§ governed by a Mohammedan named Alico; beyond which district, he says, he had to go through *Cafraria*: that is to say, the low country, the inhabitants of which, if not absolutely *negroes* (Cafres), are of much darker colour than the fair-complexioned natives of the table-land. Here then the Father had come to the *áffat*, or edge of the table-land, in nearly the 40th meridian of E. long., which meridian he must have struck in about the 8th parallel of N. lat.

Till very recently the course of the united stream of the Gíbbe or Zebeé beyond Yángaro had remained enveloped in doubt and uncertainty. The Portuguese concurred generally in the opinion that it ran to the Indian Ocean, though they were far from agreeing as to the position of its mouth. Some carried it to Mónbasah; others to Melindah; while, on the other hand, Alvarez informs us¶ that it was supposed to run *westwards* to the kingdom of Kongo.** Bruce, when in Abessinia, believed the Gíbbe or Zebeé

* Adíya or Hadéa* is the earlier and more correct designation. *Kambwát* (Cambate) is the name of a Galla tribe, which has since formed a settlement in the south of Godjam. See ‘Journal R. G. S.’, vol. xiv. p. 25.

† “A mam esquerda ficam aqui huns povos chamados *Gurá-Gués*, os quays povos reconhecem vassalagem ao Emperador.”—Tellez, p. 324. ‡ Ibid.

§ Murray, in ‘Bruce’s Travels,’ 2nd Edition, vol. iii. p. 7, mentions *Alamæ*: (Alaba?) conjointly with Wedge (Wadj, the *Ogge* of the Portuguese), as lying to the north (north-east?) of Cambat and Hadea. Wadj lies to the south of Shoa, and the Emperors of Abessinia resided in that province before they made Gondar their capital.

¶ ‘Viaggio nella Ethiopia,’ cap. cxxxiii.; in vol. i. p. 249, of Ramusio’s ‘Navigazioni e Viaggi.’

** “Non si sa particolarmente degli habitanti, dove si finisca di correre; ma si

* The ‘Hadíyah’ of Abú-l-fedá (p. 160, Rinck, Macrizi, &c., p. 14), the *h* being only a slight aspirate. “It is to the south of Wefát (Ifát of the Abyssinians) or ‘Jiberah.’” (Ibid.) The adjective of the latter name is Jiberati, contracted into Jiberti by the modern Egyptians.—F. S.

to be the Bañr el Abyad, which river, however, he understood to be the same as the Yabús of Fázókl—that is to say, the Malég of the Jesuits;* in this latter respect falling into the error of Delisle, which is pointed out by d'Anville.† But after his return to Europe, though he still continued to be mistaken in his identification of the Bañr el Abyad with the Malég, as is substantially shown by his map, he expressly repudiates any connexion between the Zebéé and the Bañr el Abyad, and maintains that the former is the same as the “Quilimancy,”‡ in which he merely falls back upon the early error of the Portuguese, as modified by Delisle.§ There can, however, be no longer any doubt as to the fact of its joining the Gódjeb, and through it the Nile.||

Instead of *Gibbe* Bruce writes *Kibbee*, and he derives this name, on the alleged authority of the Mohammedan merchants of Abessinia, from the Amharic ቅቢ : *Kébie*, “butter.”¶ But this is a mere fancy, like Abessinian derivations generally, of which so many examples are found in the ‘Journals’ of Dr. Krapf.** If the name is significant (as is most likely to be the case), it will assuredly be so, not in the *Amharic* language, which was never

presume che vada verso ponente, nel regno di Manicongo.”—i. e. the kingdom of the King of Kongo. See page 75.

* “The Abiad river is three times as big as the Nile [Bañr el Azrek]. I always believe it to be the *Kibbee* of the Nareans or Galla, the *Zebée* of the Jesuits, the *Yabous* of the Fuzucians, being the boundary of that province to the westward.”—‘Extract from MS. Notes,’ in Murray’s ‘Life of Bruce,’ p. 418, sq.

† “Le Bañr-el Abiad n’a point été inconnu à M. Delisle, et il est dénommé dans la carte que j’ai citée. Mais il ne m’a point paru, en dressant la carte de l’Afrique, qu’il me fût permis de confondre on d’identifier ce fleuve avec une rivière nommée Maleg, qui côtoie de fort près l’*Abawi* de l’*Abissinie*, et lui paroît très inférieure, selon la carte des Jésuites Portugais, sans laquelle on ne connoîtroit point le Rio Maleg.”—‘Mémoires de l’Académie Royale des Inscriptions et Belles Lettres’ (1759), vol. xxvi. p. 60.

‡ “The river Zebée or Kibbee surrounds a great part of the kingdom of Gungiro. It has been mistaken for the river *El Aice* [i. e. the Bañr el Abyad], which runs into Egypt in a course parallel to the Nile [i. e. the Bañr el Azrek], but to the west of it.”—‘Travels,’ vol. ii. p. 318. And again—“The Zebée is universally allowed by the merchants of this country, to be the head of the river *Quilimancy*, which, passing through such a tract of land from Narea to near Melinda, must have opened a very considerable communication with the inland country.”—*Ibid*.

§ See page 18, note.

|| M. Rochet d’Héricourt in his ‘Second Voyage au Royaume de Choa,’ p. 273, sq., speaks of a river Gibbe, which rises in Enarea to the S.W. of Shoa, in a mountain (mountainous country?) named Bottchia-Magna, runs from E. to W. between *Káffa* and *Kambwát*, and then turns northwards, in which direction it probably joins the Nile. Considering the vagueness of the expression “Enarea” (see page 57), it is not easy to determine whether this river in its upper course is the Gibbe of M. Lefebvre, or the Kúsaro-Gibbe, or Zebéé of Fernandes, which has its source in *Bósha*; but in its lower course it is manifestly identical with the Gódjeb, the recipient of both the one and the other of those two rivers.—9th March, 1847.

¶ “. . . Zebée, as the Portuguese call it; but its true name is Kibbee, a name given it by the Mahometan merchants (the only travellers in this country) from its whiteness approaching to the colour of melted butter, which that word signifies.”—‘Travels,’ vol. ii. p. 317.

** This forced derivation of the name “Kibbee” may be adduced in support of the argument in page 52, sq.

spoken in the countries through which the Gíbbé flows, but in that of the natives themselves. Now, of these natives we possess historical evidence of only two distinct races, namely, the Góngas and the Gallas. The former are a people who, previously to the invasion of the Gallas, extended over the whole of the table-land S. of the Abáí, but who have gradually been driven from it by the intrusive race, so that at the present day they are confined to the valley of the latter river towards the N., and to the countries watered by the Gódjeb towards the S. In the time of Fernandes (A.D. 1613) the Góngas were still in possession of Enárea Proper, as well as of other portions of the table-land; and as the river which was then called Zebeé, now bears the name of Gíbbé, it is not unreasonable to regard the latter as a *Galla* designation which, since the time of Fernandes, has superseded the earlier native name, in the same way as within the same short period the Takui has become the Dedhésa. Assuming, then, Gíbbé to be a *Galla* name, we find in M. Tutschek's 'Galla Dictionary' * the word *gíbe* to mean a "lake," or "standing water," as contradistinguished from *galána*, a "river," or "running stream;" and as Gíbbé thus appears to be not a proper name, but an appellative, we have seemingly a reason for its being applied, as we find it to be, to several rivers. We will now see if any further explanation is to be derived from the earlier name *Zebeé*.

Of several of the languages and dialects spoken among the Góngas, vocabularies are given in the second volume of the 'Proceedings of the Philological Society;' † but, as far as these vocabularies extend, they throw no light upon the subject now under consideration. To the S., however, of the Góngas—or Sidámas, as they are usually called by the Gallas and, in imitation of them, by the Abessinians—comes another far more widely spreading race, respecting which Mr. Cooley observes, ‡ "that from the confines of the Hottentots in the south of the equator on the eastern coast, and to the Camaroons on the western, there is but one family of languages which may be appropriately called the Zingian languages. Notwithstanding the variety of dialects, each tribe can understand its neighbours. There is little reason to doubt that a native of Angola would be soon able to make himself understood in Zanzibar." Of these dialects, the Sawáhílí is spoken in Zanzibar and the vicinity, on the eastern coast of Africa; and

* P. 61.—E. g. "Galáni na ñád'e
Gíbén na gezize."

"Away the river tore me,
And to the lake fast bore me."

Galla Song.

† Pp. 93–107. Ludolf, in his 'Hist. Æthiop.,' lib. i. cap. 15, gives one word of the Gónga language, *donzo*, as meaning "lord," or "master," which corresponds with the *dóndjo* (Gónga) and *dóno* (Káffa) of my vocabularies.

‡ 'Journal R. G. S.,' vol. xv. p. 193; and see Marsden, in Capt. Tuckey's 'Narrative of an Expedition to explore the River Zaire,' p. 389.

in this language *Zúwa*—in one of the cognate dialects *Zébé*—means “lake,”* in the same way as *Gíbe* does in the Galla.† In this word we have the derivation of the name of the well-known lake *Zuwái* (Zuwaja) in the S. of Shoa, which is thus seen to be not a proper name but an appellative, just as *Háik* (ሀክ *Háyëk*) is in Ethiopic. And hence we are led to the probable conclusion, that the name *Zebeé* is even of earlier date than the occupation by the Góngas or Sidámas of the countries watered by that river, and that this word, like *Zuwái* itself, is a relic of a people of cognate origin with the Sawáhilís, whose settlements once extended even thus far to the north of the equator. In the absence of all historical evidence, or of other corroborative facts, such a derivation can only be put forth as a reasonable surmise. The coincidence in signification of the two names *Zebeé* and *Gíbe*, is however too close to be well attributable to mere chance; and it is deserving of remark, that, below the confluence of the *Gibbe* with the *Gódjeb*, the united stream bears the name of *U'ma* or *O'mo*, which name (as will next be shown) there is reason for believing to be significant in the languages of *Worátta* and *Yángaro*—both of the *Gonga* family—and in like manner to mean “lake.” That a lake, or series of lakes or marshes, does actually exist along the bed of the *Gódjeb*, between the two countries of *Worátta* and *Yángaro*, is a fact which cannot well be doubted; but I am not aware of the existence of anything of the sort along the courses of the rivers bearing the common appellation of *Gibbe*. Should, however, the fact be, that these various water-courses are not perennial streams like the *Abáí*, but stand in pools during the dry season like the *Máreb*, the name would then be satisfactorily accounted for; but upon this subject more information is required before any positive opinion can be expressed.

Having at length terminated our investigation of the several rivers bearing the name of *Gíbe*, it is necessary, before returning to M. d'Abbadie's enumeration of the other tributaries of the *Gódjeb* on its left bank, to consider the question of the existence of a lake or series of lakes or marshes along the course of the *Gódjeb*. On this point that traveller says—“Le Godjab ne s'épanouit pas en lac dans Kafa;”‡ but this is directly opposed to the evidence of several credible native witnesses, and likewise to the independent testimony of M. d'Arnaud's map, in which the *Gódjeb* is laid down as running through a lake in the S. of *Káffa*.§

* See ‘Journal R.G.S.’ vol. xv., p. 203

† In the Kafir language of the Cape Colony, “a lake” is *Ik'ibi* (with the click on the *k*), written by the missionaries *icibi*. See Ayliff's ‘Vocabulary of the Kafir Language,’ 1846.

‡ ‘Nouvelles Annales des Voyages,’ 1845, vol. i. p. 263.

§ M. Lefebvre's informant Irbo in the like manner speaks quite positively as to the existence of such a lake, or rather of more than one such lake. He says (‘Bulletin,’

Dilbo, who first mentioned this lake, spoke as if it were the main stream of the Gódjeb itself, which he described as being as wide as from Angolálla to Chérkos (about 3 miles English), and as being crossed in boats capable of containing 50 or 60 persons.* The situation of this expanse of water, whether it be regarded as a lake or as the widened stream of the river, was understood from Dilbo's relation to be on the direct caravan-road between Enárea and Káffa. But subsequent information obtained in Gódjam shows that such is not the case, and that it lies further to the S., between Wolámo (or possibly the S. or S.E. portion of Yángaro) on the one hand, and Kúllo in the S. or S.E. of Worátta on the other. An earlier statement of M. d'Abbadie himself may, indeed, be quoted to prove the existence of this lake. He says—"La plus grande rivière est le Godam [Godab, *i.e.* Gódjeb], puis vient l'Ouma—il peut y avoir quelque incertitude ici, car j'ai appris plus tard qu'en Ilmorma 'ouma' veut dire lac."† By "Ilmorma" is simply meant Galla.‡ It is, however, much to be questioned whether úma (ouma) means "lake" in that language. But it may well have that signification in some other of the native tongues, and probably in those of Yángaro and Worátta, the countries between which this "U'ma" is situate; and under this view of the subject, the whole would become intelligible and consistent. To use M. d'Abbadie's words in his letter of April, 1844§—"Le fleuve lui-même qui nous occupe est le Godefo ou Godepo des Sidama, le Godjeb ou Godeb des Gallas, le Omo des Yamma et des Yangara, le Ouma des Dawaro,"|| which, as "uma means lake," might be thus explained:—Between Yángaro and Worátta (M. d'Abbadie's Dáwaro) the Gódjeb becomes "úma," *i.e.* "a lake;" the fact being the same whether the word "úma" (or "ómo") be the proper name of the river in that portion of its course, or an appellative in the languages of the two countries between which it flows. It will be seen in my map of the 23rd of November, 1843, that the "lakes or marshes" are laid down at a short distance to the S.E. of the spot where the Gódjeb passes between Yángaro

3rd Series, vol. i. p. 54), that a river joins the Gódjeb from the east, forming at the junction a lake or basin, into which several small Galla rivers discharge themselves. And he adds, that at three days' journey from its source, the Gódjeb passes through another lake in the country of Sidáma (Káffa), which is never crossed by the natives, without their first confessing themselves, on account of the frequent loss of life there.

* 'Journal R. G. S.,' vol. xii. p. 87.

† 'Bulletin,' 2nd Series, vol. xviii. p. 355.

‡ *Ilm'orma* (sons of *men*) is the native appellation of the people: *áfan órma* (the "mouth" of men) is that of their language. If, therefore, it were worth while to introduce a substitute for the well-known expression "Galla," the proper one would be *Orma* or *Orman* for the people and their language, and *Ormania* for their country. See 'Proceedings of the Philological Society,' vol. ii. p. 96.

§ 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 115.

|| The Dawáró of Makrisí (Rinck. pp. 11, 13) is probably this country.—F. S.

and Worátta, corresponding very closely with the relative position of the lake in M. d'Arnaud's map. According to Dilbo,* "beyond Kaffa, the Gódjeb is *joined* by the river O'mo, coming from the country of Doko." This was understood as meaning that the O'mo was a *separate* river, in the fork between which and the Gódjeb the kingdom of Káffa was situate.† But M. d'Abbadie's view of the case, as above interpreted, is apparently the correct one.‡

In their first visit to Abessinia, both M. Antoine d'Abbadie and his brother, M. Arnauld d'Abbadie, made mention of "a great salt lake *near Kaffa*," "the salt of which is taken for sale to Kaffa by the people of Worátta."§ In Shoa as well as in Gódjam, I made particular inquiries as to the places from whence Enárea and Káffa are supplied with salt. In the former country, I was told from Tigre, by the way of Gondar and Gódjam;|| and this I ascertained to be the fact from personal observation at Báso. But I there learned further, that but little of the Tigre rock-salt finds its way to Kaffa, that article being carried thither by the Sennár merchants by the way of Wallégga; and also that grain-salt (áshabo) is brought to Káffa *from the Indian Ocean* by the way of Góbo, Worátta, and Dóko. My informants were very precise and positive on this point, saying that the sea which is very near to Dóko, is also *that of the Banians*, with whom and with whose country (Hind) they are acquainted, from having traded with them in the ports of the Red Sea.¶ From these particulars I should be inclined to regard this "great salt lake" of the French travellers as being the Indian Ocean, especially as the same word *bahr* means both "sea" and "lake," as well in the Amharic as in the Arabic language. But in a more recent communication,** M. Antoine d'Abbadie says—"I think I have before spoken to you of the lake beyond Kaffa; and as I had always been assured that its waters are not drunk, I imagined they must be salt. But it is not so: *the water is fresh*,†† but sacred." And he goes on to say that this lake is situate in *Dáwaro* (Worátta), that "it is half as large as lake Tsána, is called Chócha (Tchotchcha),‡‡ and stretches from E. to W., its banks being steep hills. *No considerable river*

* 'Journal R. G. S.,' vol. xii. p. 87.

† Dr. Krapf mentions "a large river called Uma," as flowing through Wolámo. See 'Journals of the Rev. Messrs. Isenberg and Krapf,' p. 257.

‡ This opinion has, in fact, been since adopted by M. d'Abbadie himself. See 'Bulletin,' 3rd Series, vol. iii. p. 56, cited in page 59, *note*.

§ 'Bulletin,' 2nd Series, vol. xii. p. 189.

|| 'Journal R. G. S.,' vol. xii. p. 87.

¶ Ibid., vol. xiii. p. 264.

** 'Bulletin,' vol. xix. p. 438.

†† But in that case what becomes of *the salt of this lake*, which was said to be taken for sale to Káffa by the people of Worátta?

‡‡ 'Bulletin,' vol. xix. p. 438.

enters it, and none flow out of it." * This is, however, opposed to all the evidence already mentioned, and especially to that of Dó-djamo (a native of Worátta), who assured me that the lake is a continuation of the Gódjeb, and that it is crossed in boats on the way from Kúlló to Woláítsa or Wolámo.

As regards the further tributaries of the Gódjeb on its left bank, M. d'Abbadie says, that after the Walga and Borara (which, as is already stated, collect the waters of Gurágie) come "the Sánna, which forms the southern frontier of Túfte, and the Wósho, of which the source is in Walámo [my Wolámo or Woláítsa], at the watershed between the basin of the Nile and that of lake Abbale. This lake is said to be 80 miles in length, and to contain several islands inhabited by the Aruro negroes."† In the existing state of our knowledge of these regions, it is not possible to say whether this lake is to be regarded as one of the series of collections of fresh water lying along the easternmost edge of the table-land of Eastern Africa, such as A'shangi, Háik, and Zuwái, or whether it is similar in character to lake Abhébbad, the recipient of the Hawásh, in the low desert country lying between the high land and the ocean.‡

M. d'Abbadie remarks, in continuation, that "the country of the Dóko § (Dokko) must likewise furnish affluents, the sources of which may be presumed to lie as far S. as the 3rd or even the 2nd parallel of N. latitude; but the Dóko, whom we have questioned on the subject, assure us that none of their rivers are to be compared to the Gódjeb." How far the tributaries of the Gódjeb coming from the S.E. and S. really extend, there are at present no means of ascertaining. But the northern limits of the basin of the Shoabérri, of which river we have yet to speak, must prevent that of the Gódjeb from extending much further to the south than about the 5th parallel, unless, perhaps, in the case of some of its tributaries from the extreme edge of the table-land towards the S.E.

The French traveller, from whom we have so largely quoted, concludes by saying—"As to the tributaries of the Gódjeb on the left bank, below the point where its course takes a northerly direction, we may from theory be assured that they are not very nume-

* 'Bulletin,' 2nd Series, vol. xix. p. 441.

† 'Nouvelles Annales des Voyages,' 1845, vol. ii. p. 114.

‡ It may be the great lake mentioned by M. Rochet as situate in Korchássí, to the south of Lake Zuwái, through which the Wábbi of Juba—the Wábbi-Giwéyna or Gowin—is said to flow.—12th March, 1847.

§ *Doko* in the Galla language means "stupid," "ignorant." It is not improbable that this is the origin of the name of the rude savages, of whom, from Dilbo's report, such curious tales have been related. They are first mentioned by myself in 'Journal R. G. S.', vol. xii. p. 87: see also vol. xiii. p. 265, sq, and the 'Literary Gazette,' of the 30th Dec., 1843, p. 851, sq.

rous." By this M. d'Abbadie alludes to the direct stream of the Bañr el Abyad above the 10th parallel, with which he supposes the Gódjeb to be identical, but erroneously. The fact is, however, that below the point where the Gódjeb is joined by the Gíbbe, nothing whatever is known respecting its tributaries on the left bank: but, from theory, there is no reason for imagining that they are less numerous than those of the Abáí on its left bank, the two rivers being in other respects very similar.

We have thus come once again to the Bañr el Abyad in about 9° 20' N. lat. and 31' E. long., where we had left it for the purpose of tracing the Sobát, Téfi, or Gódjeb to its source.

Following the progress of the Egyptian expedition, we now ascend the Nile in a direction almost due W., till, in about 29° E. long., we come to a lake measuring from 15 to 20 miles each way,* abounding in fish, and studded with islands. M. Werne states† that the name of this lake could not be ascertained, because its banks were lined with sedge and shallows; by which it may be presumed it is to be understood that the land was unapproachable so as to allow of communication with the natives. A subsequent traveller, M. Lafargue, who ascended the river in the beginning of 1845, says that this lake is called *No*:‡ it is evidently the lake Kúra of the Arabian geographers—the Cuir or Cura of the maps.§ This lake is formed by the junction of two large rivers. The one which falls into it from the S., and up which the several expeditions proceeded, is considered as the main stream of the Bañr el Abyad or Nile: the other, coming from the W. or N.W., was, by several persons who had served under Muṣṭafá Beg, called Bañr el Ghazál, and this name was subsequently confirmed by that officer himself on the return of the expedition to Khartúm.|| M. d'Arnaud suggests that it is the Keilāh, or Miselád of Browne.¶

Above lake Kúra or No, the direction of the Bañr el Abyad for

* This is the size attributed to it in M. d'Arnaud's map; but M. Werne says (p. 48) —“Der See hat 18–20 Meilen im Quadrat,” which, if ordinary German miles are meant, would make it to be of considerably greater extent. But probably geographical miles, of 60 to the degree, are intended.

† P. 48.

‡ ‘Bulletin,’ 3rd Series, vol. iv. p. 160. Riley mentions that, according to Hadji Hamet, *Lake Chad* bears the name of *Nu*. Upon this, Reichard, who as early as 1802 opposed the views generally entertained in England respecting the “Niger,” and contended that the Djoliba of Park ran southwards into the Bight of Benin, precisely as the Kwára (Quorra) was found to do by Lander in 1831 (see ‘Bulletin,’ 3rd Series, vol. i. p. 196):—this learned geographer suggests that the word *Nu* may be an abbreviation of *Nuchul* [or Nuluch], the name given to the lake out of which the Nile [i. e. its great western arm] was considered to issue (see Mela, lib. iii. c. 9; edit. Gronovii, p. 312, sq., and p. 866, sq.). Orosius, lib. i. c. 2, calls this lake *Nuhul*.

§ Cuir or Kuir is a false reading of Kúra كورى, the name given in Abú-lfedá, pp. 37, 163.—F. S.

|| Werne, p. 48.

¶ ‘Bulletin,’ 2nd Series, vol. xviii. p. 90.

the remaining distance through which it has been navigated, has a general bearing of about S.E. It is here called by the natives Kíti and Kírte; but in the country of Bari, Barry, or Bér (Behr), the extreme point attained, it is named Tubiri.* Along its entire course the river is without cataracts, but with occasional shallows, and it winds among marshes and swamps, which are, in part, the beds of watercourses joining the main stream on either side during the rains.† From the character of this country, it is manifest that the inclination of the bed of the stream must be insignificant. But in about 5° N. lat. the valley of the river begins to be confined between mountains, and its bed rises sensibly, so that at length the current attains a velocity of two miles an hour.‡ In 4° 42' 42" N. lat. and 31° 38' long. E. of Greenwich, a ridge of gneiss, running directly across the stream from E. to W., arrested the further progress of the second expedition, the one which reached the highest point.§

Respecting the river further up, the particulars furnished by M. d'Arnaud and M. Werne, from native information, differ materially. The former says,|| "When the waters are high the river is still navigable for at least some 30 leagues," to a point where "several branches unite, of which *the most considerable one comes from the E.*, and passes below a large country ('au bas d'un grand pays') named Berry, situate a fortnight's journey to the E. of the mountains of Bellénia;" which mountains are shown in that traveller's map as lying at a distance of 20 or 30 miles to the E. of the extreme point of the expedition. This branch of the Nile is, in the same map, named *Shoabérri* (Choa-Berry), and the Gódjeb is laid down as tributary to it. On the other hand, M. Werne informs us,¶ that, *in the country of Berri*, which lies 10 days to the E. of Bari, "*there is no river*, but the people obtain their water from wells." And he adds, that they were informed by Lakono, the reigning Matta (king) of Bari, that the river continues "*a month's journey further south* before reaching the country of Anyán (Anjan), where it divides into four shallow brooks; but whether these come from the mountains or out of the earth he was unable to say."***

Notwithstanding the apparent discrepancy of these two relations, the accuracy of *both* may, subject to certain qualifications, be admitted, if we suppose that, in the case of M. d'Arnaud, that traveller was induced to consider the *Shoabérri* to be the *principal* arm by the particulars furnished to him in Egypt by Messrs.

* Werne, p. 49.

† Ibid., p. 48.

‡ Ibid., p. 49. These are apparently geographical miles, but they might possibly be usual German miles, each equal to four geographical.

§ Ibid. Is it not possible that the expedition had here got out of the main channel of the Nile, without being aware of having done so?

|| Bulletin, vol. xix., p. 95.

¶ P. 50.

*** Ibid.

Blondeel and Bell respecting the Gódjeb, which river was described to them by their native informants as being the main stream of the *Bahr el Abyad*. This information must, however, be viewed in the same light as the various native reports already commented on, which are founded on the belief of the people inhabiting the banks of each successive branch of the Nile, that *their* river is the continuation of the principal stream. By this observation, it is not intended to express any doubt respecting the existence of a large eastern arm of the *Bahr el Abyad* above the furthest point reached by the expedition: the particulars subsequently furnished by M. d'Arnaud to M. Jomard—namely, that “almost all the natives concur in stating that the river continues in a S.E. direction for 50 or 100 miles, but afterwards turns to the E. and N.E.,”*—do not allow this fact to be questioned. All that is contended for is, that the river thus described is neither the Gódjeb nor, in its upper portion at least, the direct stream of the Nile. As respects the former of these points, the real course of the Gódjeb is, it is apprehended, sufficiently established in these pages; and as to the latter, its correctness must be admitted unless we altogether discard M. Werne's information, which we certainly are not justified in doing. And, indeed, M. d'Arnaud himself was informed of a river which comes from the *south*, by the people of Comboh, a place distant a day and a-half's journey beyond the furthest point reached by the expedition.†

It appears, therefore, to result that the *Shoabérri* of M. d'Arnaud's map is *another* great arm of the Nile, having its course below and round, consequently *beyond*, the country of Berri; but not *in* it, since M. Werne expressly tells us the people of that country obtain their water from wells and not from a river. The distance at which it makes this circuit round Berri, namely 15 days' journey, may be estimated at from 180 to 200 miles to the E.; so that the course of the river will be carried to about the 35th meridian E. of Greenwich, and its source may be conjecturally placed somewhere between the fourth and fifth parallels of N. lat. Thus the *Shoabérri* will be seen to form a curve similar to that of the *Abá'i* and of the Gódjeb; while towards the Nile its lower course will have precisely the same bearing as those two rivers and the *Tákkazie*, namely from S.E. to N.W. Indeed, from the general fall of the western slope of the mountain-chain of Eastern Africa towards the valley of the Nile, this last condition is indispensable; for it may be regarded as physically impossible, that any river joining the main stream on its right bank, should have a course of 350 miles from N.E. to S.W., as

* 'Bulletin,' vol. xix. p. 444, sq.

† Jomard, 'Observations sur le Voyage au Darfour,' p. 31.

the Shoabérri is made to have in M. d'Arnaud's map, evidently from a desire to connect it with the Gódjeb.

As regards the direct stream of the Nile above the confluence of the Shoabérri—assuming the Tubiri to be that direct stream—our guide must be M. Werne, on whose authority, or rather on that of his informant, Lakono, we have to carry it a month's journey further to the south. If, now, the day's journey be roughly estimated at 12 geographical miles, this gives 360 geographical miles as the length of the river above $4^{\circ} 42' 42''$ N. lat.; and this distance, measured in a direction due S., brings us to about $1^{\circ} 20'$ S. lat. and $31^{\circ} 40'$ E. long.* Here, in the country of Anyán, the river is said to divide into four shallow brooks; and beyond this point our information, imperfect as it is, ceases altogether.†

Let us now see into what portion of Africa the head of the Nile has thus been brought.

In Mr. Cooley's valuable memoir on 'The Geography of N'yassi, or the Great Lake of Southern Africa'—the lake Zambéze ‡ of the Portuguese—published in the fifteenth volume of the Society's 'Journal,' § public attention is again directed to the country of *Móno-Moézi*, which, as early as the end of the sixteenth century, was described by the Portuguese as an important empire in the interior of Africa. Since that period, however, as Mr. Cooley observes, || "our acquaintance with it has not only not gone on increasing, but the very name has sunk into obscurity. The information which we at present possess respecting it is of but a vague and general character. The country seems to be an elevated plain, the ascent to which lies chiefly in the territories of the M'sagára and of the Wohaha;"—similar, in its general character, to the ascent from the low country of the Adál or Danákil to the Abessinian plateau, of which this "elevated plain" is manifestly a continuation.

* It must be understood that this is a mere approximation.

† M. Lafargue, who ascended the Bahr el Abyad in 1845, says, that according to the report of the negro subjects of King Lakono, the *second* branch of the Nile which he ascended—the Bahr el Ghazál, or Keiláh, is regarded by him as the *first*—turns to the *west* at a distance of 6 days' journey from the extreme point reached by him. See 'Bulletin,' 3rd Series, vol. iv. p. 161. While M. d'Arnaud had his attention more particularly called to the Shoabérri, which joins the Nile from the *east*, M. Lafargue's inquiries would seem to have been especially directed to the tributaries on the *western* bank. This will not only account for the apparently conflicting testimony of the two travellers, but may also reconcile them both with M. Werne. The general conclusion to be arrived at from the whole is, that far to the south of 5° N. lat. the Nile is still a very large river, with considerable streams falling into it both from the east and from the west.

‡ This name is usually misprinted Zembere, Zembre, or Zambre. It is the lake *Maravi* of the maps.

§ Part ii. p. 185, *sqq.*

|| 'Journal R. G. S., vol. xv. p. 212.

The country of Mónico-Moézi appears to lie to the N. and N.E. of lake Zambéze; and, from a consideration of the positions of the adjoining districts, Mr. Cooley concludes that its northern limit may be "rudely fixed in the third or fourth parallel of S. lat.;"* and in the map accompanying his Memoir it is laid down as extending from the 30th to the 35th meridian of E. long. But, in his 'Further Explanations in reference to the Geography of N'yassi,' contained in the succeeding Part of the Society's 'Journal,'† that gentleman, at the same time that he shows, from information subsequently obtained, the general correctness of his previous results, admits that he has "fallen short of the truth by about 150 miles" with regard to the position of certain points on which those of the central portion of his map mainly depend, the deficiency in distance being on a line bearing about N.W. This variation necessarily affects, though perhaps not to the whole extent, the position previously attributed to the N'yassi, or lake Zambéze, and consequently that of the country of Mónico-Moézi also; and hence the approximate northern limit of that country has probably to be advanced to within two degrees S. of the equator, while it may at the same time be necessary to move it westwards to within the 29th and 34th meridians of E. long. Now, this brings us precisely to the spot to which, on the authority of M. Werne, we have already carried the head of the Nile; so that it results that this river has its origin in the country of Mónico-Moézi. This is, however, only a reproduction of the long-discarded and almost-forgotten opinion of the Portuguese writers of the sixteenth and seventeenth centuries, who concur generally in stating that the Nile flows from lake Zambéze, in the empire of Mónico-Moézi, which country they further describe as lying immediately round the "Mountains of the Moon."

It is true that the river "Nile" which they thus make to flow from lake Zambéze is not the Bahr el Abyad, but the *Takui*,‡ the western arm of the Bahr el Azrek. But this is an error, the origin and progress of which may readily be traced; and its detection will serve to explain how it has happened, that, in the maps of Africa of the seventeenth century, the empire of Abessinia is stretched out so far to the S. and W. as to cover almost the whole of the interior of the African continent. The state of the case is briefly as follows:—

By Ptolemy we are informed§ that the river of Egypt is composed of three great arms, the Astaboras, the Astapus, and the Nilus. Of these the Astapus flows from lake Coloë, while the Nilus is formed of two rivers, having their sources in the

* 'Journal R. G. S.,' vol. xv. p. 213.

† Vol. xvi. p. 138, sq.

‡ De Barros, 'Asia,' vol. iii. part. ii. p. 373.

§ Lib. iv. cap. viii. p. 113 (edit. Bertii, p. 129).

“Mountains of the Moon,”* each of which rivers passes through a lake before uniting to form the Nilus. This statement of Ptolemy forms the groundwork on which the Portuguese engrafted the positive information obtained by them in their possessions on both shores of the continent and likewise in Abessinia. In the former they became acquainted with the great lake, called by them Zambéze, from which the Nile of Egypt was said to flow, and which lake they had no difficulty in identifying with the easternmost of Ptolemy’s two lakes. Of the other lake described by that geographer as lying far to the W. they appear to have had no knowledge. In Abessinia, on the other hand, they ascertained the existence of the Tákkazie and Abáï, and became acquainted with the fact that the latter flows through lake Tsána; so that they readily identified those two rivers with the Astaboras and Astapus, and lake Tsána with the Coloë of Ptolemy. Thus far all was clear, and (as now appears) in accordance with the truth. Of the western arm of the Nilus of the Greek geographer they knew absolutely nothing; and of its eastern arm they appear only to have learned, in a general way, that it came from lake Zambéze. With its course as the Bahr el Abyad they were personally unacquainted, and from the Abessinians they were not likely to learn anything, owing to the ignorance of that people even of that river’s existence.† But they did learn in Abessinia that *the Bahr el Azrek* was, as it still is, considered by the natives to be the true Nile and the Gihon ‡ of Genesis, and that it is composed of *three* rivers, the Tákkazie, the Abáï, and the Takui; and as they identified the two former with the Astaboras and Astapus, it was only natural that they should regard the remaining river, the Takui, as the Nilus. This identification having once been adopted, it followed as a necessary consequence that the Takui—the pseudo-Nilus—must have its origin in lake Zambéze; and that it does so is expressly asserted by de Barros.§ But the sources of the Takui are not less expressly described by the same writer|| as being situate in Shínasha, Dámot,¶ and Bizámo, all well-known provinces of Southern Abessinia; and as the Portuguese who visited that country prior to the commencement of the seventeenth century, appear not to have possessed the means of deter-

* Lib. iv., cap. ix. p. 115 (edit. Bertii, p. 131).

† In proof of this, see page 29, *sq.*

‡ It is called Sihon (Saihún) by Makrizi (Rinck., pp. 2, 36).—F. S.

§ “E destes tres notaveis rios, que ao presente sabemos procederem deste lago, os quaes vem sahír ao mar tão remotos hum de outro; o que corre per mais terras he o Nilo, a que os Abexyns da terra do Preste João chamam Tacuy, no qual se mettem outros dous notaveis, a que Ptholemeu chama Astabora, e Astapus, e o naturales Tacazy, e Abahui [Abahui=Abáwi, i.e. Abáï].”—‘Asia,’ vol. iii. part. i. p. 373.

|| Ibid. See the passage cited in page 29.

¶ i. e. the ancient Damot, south of the Abai.

mining the latitude so as absolutely to fix the position of those distant provinces, there was no good reason why those provinces should not accompany the Takui, in its character of the Nile, southwards into the vicinity of lake Zambéze, the latitude of which was approximately known from the settlements in Kongo and Sofálah. The error, great as it was, did not, however, terminate here. Lake Tsána (Coloë), from which the Abáï, the central stream of Abessinia, issues, was known to be situate in or near to the province of Gódjam, which province was in like manner known to border on Shínasha, Dámot, and Bizámo; and as these latter provinces had been removed to the neighbourhood of lake Zambéze in company with the Takui, there was no alternative but to carry Gódjam, with the Abáï and lake Tsána, in like manner away to the S.; so that it resulted that this latter lake was made to usurp the place of the Zambéze, and to become Ptolemy's eastern lake.* In the beginning of the seventeenth century, the Portuguese Jesuits, by observing (if even roughly) the altitude of the pole in Abessinia, and likewise by tracing the curve of the Abáï round Gódjam, were enabled to correct this fundamental error in African geography, so far as the Abáï and lake Tsána are concerned. But they had, of course, no means of appreciating the mistake with respect to the Bahr el Abyad; and as by that time the southern provinces of Abessinia were overrun by the Gallas, the Jesuits would seem not even to have acquired any knowledge of the Takui or western arm of the Bahr el Azrek.† The confusion in the maps remaining thus inexplicable, the information of the early Portuguese, which is really most valuable if understood, has been tacitly allowed by later geographers to sink into oblivion. However, from the explorations and researches of the last few years, and principally from the positive information respecting the Bahr el Abyad obtained by the Egyptian expeditions up that river, a new era in the history of the basin of the Nile has now commenced, which pro-

* Thus Tellez says, in speaking of Lake Tsána, "Chamou Ptolomeu a esta alagoa, Coloe, Joam de Barros lhe chama Barcenà [Bahr Tsána], a respeyto parece de hũa ilha que està junto ao lugar por onde o Nilo saye. Os doutissimos Gerardo Mercator e Joam Jansonio nas suas famosas taboas da Abassia poem dous nomes a esta alagoa, e chamam Zambre [Zambeze] a parte que fica pera o Sul, e dizem Zaire a que olha pera o Norte. Porém o seu nome como ja dissemos he Bar Dambeá."—"Historia, &c.," p. 14.

So, too, dos Santos says:—" . . . O rio Nilo, o qual nasce no sertão desta Ethiopia da hum grande lago chamado Barzêna [Bahr Tsána] situado em doze graos da banda do Sul."—"Ethiopia Oriental," Part. i. liv. iv. cap. xiii. fol. 104.

As a consequence of this confusion of lake Tsána with lake Zambéze, the Wábbi, and afterwards the Zebeé, was made to be the head of the Kilimáne. See on this subject page 17, note.

† Hence it arose that the Portuguese Jesuits, though they correctly considered the Abáï and Lake Tsána to be the Astapus and Coloë of Ptolemy, were yet guilty of the inconsistency of making the former river to be, at the same time, the Nilus of that geographer.

mises to be far more fruitful in results than any that have preceded it, not merely as regards our knowledge of the vast regions watered by that still mysterious river, but likewise, as it is fervently to be hoped, in the improvement of the millions of our fellow-creatures with whom those regions teem.

After what has been already stated, there scarcely remains room to doubt the fact that the head of the direct stream of the Bañr el Abyad, or Nile, is in the country of Móno-Moézi; and such being the case, there is nothing unreasonable in the opinion maintained by the early Portuguese, that that river issues from Lake Zambéze, situate in that country. Indeed, that such is actually the case, is repeated at the present day by a native of Zanzibar, but born of Móno-Moézi parents—one “of the *Manmoise* tribe,” as he is styled by Mr. McQueen, who communicated the information.* This individual, Lief ben Saied by name, states that “it is well known by all the people there that *the river which goes through Egypt takes its source and origin from the lake,*” † namely, Zambéze or N’yassi.‡

Another point to be noticed is Ptolemy’s well-known statement that the Nile rises from the “Mountains of the Moon.” These mountains, he says,§ stretch from E. to W. across the continent for a distance of 10 degrees of longitude, and at their eastern extremity is one of the two lakes from which the Nile issues, that is to say, the head of the great eastern arm of that river. And in describing the western shores of the Indian ocean, he says || that on a large bay or gulf in the coast of Africa, called “Barbaricus Sinus,” there dwells a nation of Anthropophagi, *the western part of whose country extends to the Mountains of the Moon.* Our actual knowledge of these regions may be insufficient to enable us to determine the precise position of the country of the Anthropophagi: but it may, in a general way, be asserted that it is that portion of the belt of low land extending along the coast of Zanzibar, which lies below the eastern flank of the table-land of Móno-Moézi, in which lake Zambéze and the head of the Nile have already been placed.¶

* ‘Journal R. G. S.’ vol. xv. p. 371, *sq.*

† Ibid., p. 373.

‡ If this information and that of the early Portuguese be correct, there is reason for believing that the Egyptian expedition, in the extreme portion of its voyage, had left the main channel of the Nile; and the Tubiri will be only another of its principal arms.

§ Lib. iv. cap. ix. p. 115 (edit. Bertii, p. 131).

|| Ibid., cap. viii. p. 113 (edit. Bertii, p. 129).

¶ If the *Menuthias* of Ptolemy be not Madagascar, but the island of Zanzibar, as was contended by d’Anville (‘Mémoires de l’Académie des Inscriptions et Belles Lettres,’ vol. xxxv. 1770, p. 593, *sqq.*), and has lately been argued with much ability by M. de Froberville (‘Bulletin,’ 3rd Series, vol. i. p. 224, *sqq.*), it will follow that the position of the Barbaricus Sinus, and consequently that of the country of the Anthropophagi and of the “Mountains of the Moon,” may be determined with great precision.

It is likewise to be remarked, that, in a passage cited by De Sacy from Makrizi,* it is stated that *the mountains along the eastern coast of Africa*—opposite the great island (i.e. Madagascar) in the sea of Zingebár facing Ceylon [Silán].—are called جبل القمر; and if this statement is to be regarded, not as a mere variation and amplification of the earlier one of Ptolemy, that the country of the Anthropophagi reaches westwards to the "Mountains of the Moon," but as the assertion of a *fact*, of which the Arabian writer had acquired an independent knowledge (whatever fanciful derivation he may have chosen to give to the name جبل القمر), it affords a further confirmation of the results already arrived at from so many totally distinct and unconnected sources.

Thus, in the construction of this theory as to the position of the head of the Nile, all the materials, from whatever quarter collected, converge to the same point. The arch is formed, with the exception of the key-stone, and this is supplied by the signification of the expression "Móno-Moézi." This name is a compound word, of which the latter component alone is properly the name of the country, the former, *Móno* or *Máni*, signifying "king."† Hence we find Kongo spoken of by Alvarez as the kingdom of *Manicongo*,‡ and the Portuguese settlements in Africa are styled the country of *Mani-Puto*;§ and so the empire of *Móno-Muézi* is that of *the king* of Moézi. Now, in the languages extending over the whole of Southern Africa, and of which that of the country of *Móno-Moézi* itself is a principal dialect, the word *Moézi*, in various forms, means "the moon."|| And as Ptolemy was told, and as the fact now appears to be, that the source of the Nile is in *the mountains*, or hill-country, of *Moézi*, we are warranted in concluding that he merely *translated* that expression into τῶν ΣΕΛΗΝΗΣ ὄρος,—*the mountains of THE MOON*. We may hope,

* 'Relation de l'Egypte,' par Abd-Allatif, p. 7. See the note in page 52 of the present Essay.

† Mr. Cooley says ('Journal R. G. S.,' vol. xv. p. 211)—"The name Monomoezi, or, as it might perhaps be better written, M'wana-M'wézi, is a political appellation, M'wana implying sovereignty. . . . From Congo across to Zanzibar this word takes the various forms of Mani, Muene, Muana, and Buana, which last signifies *master* in Sawáhili. The original meaning, however, of the word, which is always prefixed to the name of the land giving the title, is probably very different. The geographers of the seventeenth century took care to point out the fact that 'the empire of Monomoezi lies immediately round the Mountains of the Moon.' They would have been delighted had they known that Moézi signifies, in Sawahili and Mucaranga, the moon—in Bunda, riégi or moégi."

‡ See page 60, sq. of this Essay.

§ Pigafetta, in Purchas's 'Pilgrims,' vol. ii. p. 1007; and see p. 1009, sq., where other similar instances are cited.

|| In Sawáhili and Mucaranga, *moézi*; in Bunda, *moégi* (Cooley, in 'Journal R. G. S.,' vol. xv., p. 211); in Monjou, *muéze* ("mooeize"—Salt's 'Voyage to Abyssinia,' Appendix, p. i.); in Kongo, *muézi* ("mooezy"—Marsden, in Tucker's 'Narrative,' &c., p. 389); and in Mozambique, *moise* ("moysé"—Ibid.).

therefore, to have at length found the key to the *arcanum magnum* of geography. And as it will thus result, that the source of the Nile is situate at a comparatively short distance from the sea-coast within the dominions of the Imám of Maskat, the friend and ally of the principal maritime powers of the world, there cannot exist any obstacle of moment in the way of setting at rest this great geographical problem, which for thirty centuries has riveted the attention of the civilized world, at the same time that it has baffled the attempts to solve it made by the most celebrated rulers of Egypt, from the Pharaohs down to Mohammed 'Alí.

Having thus traced the Nile to its source, and considered all its tributaries on the right bank as far as they are known to us, it is proper that we should take a general survey of the country in which these streams take their rise, as the means of forming a correct idea of the physical configuration of that portion of the African continent which forms the eastern moiety of the basin of the Nile.*

Till very recently we were but imperfectly acquainted with the true character of the high table-land, in which the numerous head-streams of the great river which forms the subject of the present Essay have their origin. The existence, at a short distance from the sea-coast, of an elevated country, possessing, in consequence of its elevation, a mild and temperate climate, has indeed been well known since the time of the residence of the Portuguese in Abessinia from the fifteenth to the seventeenth century. That in this high country are more elevated spots, such as the mountains of Samien in northern, and of Gódjam in southern Abessinia, where frost and snow exist, was likewise known to us from the same sources. But so limited and imperfect was the general view taken of this high land by the Portuguese, and so little had the accounts of subsequent travellers tended to extend that view, that only five and twenty years ago, when that able geographer, Professor Ritter, proceeded in his usual masterly way to generalise from their data, he was led to regard the Abessinian plateau as consisting of *a succession of terraces rising one above the other*, the lowest being towards the Red Sea, and the highest being in Enárea, where the line of separation between the waters flowing to the Nile and those of the rivers having their course to the Indian ocean was considered to exist.†

* The remarks which follow are taken, with some modifications, from a memoir read at Southampton on the 16th September last, before the Section of Geology and Physical Geography of the British Association for the Advancement of Science; an abstract of which memoir is printed in the 'Report of the British Association,' for 1846: 'Transactions of the Sections,' p. 70, *sqq.*

† 'Erdkunde,' Afrika, vol. i. p. 183.

Dr. Rüppell was the first to show the erroneous nature of the general view thus taken by his learned countryman.* From the section of the country between the shore of the Red Sea at Masówah and the first bridge over the Abai, which section is published in the 'Monatsberichte' of the Geographical Society of Berlin,† it is manifest that, so far from the high country rising in terraces as it recedes from the coast, its summit line is towards the coast itself, and that from thence the land falls gradually towards the interior. This view of the nature of the country is entirely corroborated by the N. and S. section, continuing that of Dr. Rüppell, from the upper bridge as far as the southern limit of the Abai in about 10° N. lat., and by the E. and W. section extending from 43° E. long. to near 36° E. long., contained in the fourteenth volume of the 'Journal of the Royal Geographical Society.' From these sections it appears that at Hálaï, on the summit of the ascent of Mount Taránta, at a distance of not more than 23 geographical miles from the Red Sea at Zúllah (Adule) near Masówah, the edge of the table-land has an absolute elevation of 8625 English feet; which gives a rise of as much as 1 in 16·15—equal to an angle of $3^{\circ} 33'$ —to the eastern slope of the table-land, or, as it may be more correctly called, the broad mountain-chain of Abessinia. On the other hand we find, that at Khartúm, at the junction of the Blue River with the Nile, in nearly the same latitude as Hálaï, and at a distance of about 380 geographical miles from that place, the elevation of the Nile above the ocean is 1525 feet.‡ The fall in that direction is therefore only 1 in 324; which gives rather more than $10\frac{1}{2}'$ of a degree as the angle of the western counter-slope towards the interior of the continent. Consequently, on a line along the 15th parallel of N. lat., the eastern slope of the Abessinian mountain-chain towards the sea, is to the western counter-slope towards the Nile, as 20 to 1.

This proportion may perhaps be rated somewhat too high, in consequence of its being estimated on a direct E. and W. line, whereas it ought rather to be calculated on a line in the general direction of the courses of the principal rivers, namely, from S.E. to N.W. It happens, however, that we possess the means of ascertaining the proportion in this direction likewise. Khartúm, the elevation of which city is 1525 feet as already stated, lies very nearly to the N.W. of Mélka-Kúyu, the ford over the Hawásh on the way from Tadjúrrah to Shoa, at which spot the absolute ele-

* 'Reise in Abyssinien,' vol. i. p. 304. And see Berghaus's 'Annalen,' 5th Series, vol. i. p. 56.

† Part ii.

‡ i. e. 1431 French feet. See Russegger, 'Reise in Europa, Asien, und Afrika,' vol. ii., part i. p. 544.

vation of that river is about 2200 feet. The height of the eastern edge of the table-land on the summit of the ascent of the Chákka mountains behind Ankóbar, the capital of Shoa—which spot is not very far removed from the direct line between the two extreme points—is about 9000 feet; and as this spot is 38 geographical miles from Mélka-Kúyu, it gives a rise of 1 in 38·83 to the eastern slope, equal to an angle of $1^{\circ} 41'$. On the other hand, the distance from the summit of the Chákka to Khartúm being about 530 miles, the fall of the counter-slope is 1 in 429, equal to an angle of $8'$. These calculations make, therefore, the proportion of the two slopes to be as 12·6 to 1.

It will be observed, that in the latter instance the eastern slope is taken, not from the level of the ocean, but from that of the Hawásh, which has an elevation of 2200 feet; that river being here the recipient of the waters of the eastern slope, in the same way as the Nile itself is the recipient of those of the western counter-slope. From the Hawásh to the sea is about 200 miles, which gives a fall of 1 in 550, equal to an angle of $6\frac{1}{4}'$ of a degree, for the dip eastwards of the low desert country between the Hawásh and the Indian Ocean, inhabited by the Beduín Dan-káli tribes.*

As regards the western part of the counter-slope of the Abesianian chain, it would seem that the fall of the land towards the Nile is there considerably more abrupt than it is on the eastern portion of that counter-slope, so that the surface of the table-land—the broad summit of the mountain-chain—itself approaches more to a level. But it is nevertheless certain that the latter is in no part absolutely horizontal, and that, in fact, the general dip westwards commences from the easternmost edge of the plateau.

As a whole, this table-land may be described as a succession of extensive undulating plains, declining very gradually towards the W. and N.W., and being intersected by numerous streams; which streams, after a short course on the level of the plateau, fall abruptly into deep-cut valleys, in which they soon reach a depression of from 3000 to 4000 feet below the general level of the table-land. The valleys of the larger streams are of considerable width: that of the Abáí, to the S. of the peninsula of Gódjám, is at least 25 miles from the extreme points where it breaks from the table-land on either side. And as the country within these valleys is exceedingly wild and irregular, possessing all the cha-

* In this country, at about 25 miles to the west of Tadjúrrah, is situate the salt lake, Asaal, which is remarkable for its great depression below the level of the ocean. This depression, which was first ascertained in 1840, was estimated by me at 760 feet ('Journal R. G. S.,' vol. xii. p. lxxi.) Since then it has been measured barometrically by Lieut. Christopher (Ibid., vol. xii. p. 222), and M. Rochet d'Héricourt ('Second Voyage à Choa,' p. 316); the former of whom makes it to be 570 feet, and the latter 217·7 mètres, or 714 feet.

racters of a mountainous one, nothing is easier for a traveller, who has not first taken a comprehensive view of the entire region, and who, on crossing a river, finds himself shut up within a mass of broken country rising around him on all sides to a relative elevation of 3000 or 4000 feet, or even more, than to suppose that, in ascending this broken country on either side, he is crossing a mountain-chain; whereas, on reaching the summit, he has merely arrived upon the table-land. It is important to bear this in mind in the perusal of the works of travellers in Abessinia, many of whom, under the impression thus alluded to, place *mountains* where mountains, in the ordinary acceptation of the term, do not exist.

Besides the inequalities of surface occasioned by the deep valleys of the rivers, the uniformity of the table-land is further broken by *higher* mountain masses, which in some parts, as in Sámien, A'ngot, Gódjam, Miécha, Káffa, &c., attain an absolute elevation of from 11,000 to 15,000 feet. As far, however, as our present knowledge of them extends, these greater elevations do not form parts of any regular system, but appear to be distinct isolated masses, unconnected either with each other or with the general bearing of the entire plateau.

As already mentioned, the rivers of Abessinia, in the early part of their courses, flow over the level surface of the table-land, being little better than muddy brooks, which in the dry season are nearly without water, but which during the rains overflow their banks so as almost entirely to inundate the plain country. Where they begin to break from the level, which they do by fissures in the rocky surface, at first only a few yards in width but gradually opening to the extent of several miles, they at once form cataracts of 80 or 100 feet, and in some cases much more, in height, and then continue down a succession of falls and rapids, so as to descend several thousand feet in a course of a few miles. For example, the absolute elevation of the Abáí just above the cataract of *Tís Esát*, or the "Smoke of Fire," in the N.E. of the peninsula of Gódjam, is about 6000 feet; while at the "Broken Bridge," only 25 miles lower down the stream, it has already descended upwards of 2000 feet, or 80 feet per mile, its height there being 3852 feet; and in the next 80 miles of its course it falls nearly 1000 feet more.* So too, the Chácha and Berésá, two of the sources of the Djámma, a principal tributary of the Abáí, flow over the plain on either side of Angolálla, the Galla capital of Shoa, at an absolute elevation of about 8500 feet: at only 100 miles from thence, the Djámma joins the Abáí a few miles below the ford of the Dérra Gallas, on the way to Gódjam,

* See 'Journal R. G. S.' vol. xii. p. 253; vol. xiv. pp. 28, sq., 49, 66, sq.

where I found the elevation of the latter river to be 2936 feet, which gives a fall of about 5600 feet, or 56 feet per mile on the entire length of 100 miles.*

The fall of the tributaries of the Nile diminishes gradually as they flow north-westwards to join the main stream, which latter, skirting, as it does, the western flank of the high land, is the *sink* into which the Tákkázie, the Bahr el Azrek, the Gódjeb Télfí or Sobát, the Shoabérri, and whatever other rivers there may be, are received; its current being sluggish, and (as would appear) almost stagnant in the upper part of its course, except during the floods. In the dry season its bed would indeed almost seem to consist of a succession of lakes and swamps, rather than to be the channel of a running stream.† At Khartúm, at the confluence of the Bahr el Azrek, we have seen that the height of the bed of the Nile above the ocean is only 1525 feet, and it is

* Mr. McQueen, in his 'Geographical Memoir,' prefixed to Messrs. Isenberg and Krapf's 'Journals,' pp. [35] and [72], objects generally to the estimates of elevation of the beds of the rivers Abáí and Tákkázie respectively, made by Dr. Ruppell and myself, as being opposed to those of Bruce. This latter traveller (vol. iii. p. 642) calculates the source of the Abáí to be "more than two miles above the level of the sea," which, as two statute miles are equal to 10,560 feet, may be taken at 11,000 feet in round numbers. I estimated it by means of the hypsometer at 8770 feet, or probably a trifle more (see 'Nouvelles Annales des Voyages,' 1846, vol. iii. p. 224, *sq.*); and M. d'Abbadie by the same means made it to be 9206 feet (*ibid.*). Hence the true elevation of the source of the Abáí may be stated, in round numbers, at 9000 feet, or 2000 feet lower than Bruce's estimate. Further, Mr. McQueen states that Bruce calculated the plain of Sennár (which is but little above the river) to be about 5000 feet above the level of the sea. M. Russeger ('Reise, &c.,' vol. ii. part i. p. 541) has however determined the elevation of the bed of the Nile at Khartúm, the present capital of Sennár, to be only 1431 French, equal to 1525 English feet, or about 3500 lower than Bruce made it to be. Thus it must be admitted that Bruce's estimates are erroneous, and that any arguments founded on them are consequently inconclusive. Upon a proper comparison of the several heights determined by Dr. Ruppell, M. Russeger, and myself, quite independently of each other and in different parts of the valleys of the Nile and its tributaries, it will be found that they are entirely consistent and confirmatory of one another. When Mr. McQueen expressed the opinion (*loc. cit.*) that "there are certainly neither cataracts nor rapids in the stream of the Abawi from its sources to the point where Dr. Beke first crossed it [between Shóá and Gódjam, in about 10° 15' N. lat.], to account for 7340 feet [it should be only 6000 feet, namely 9000—3000, instead of 10,340—3000], the difference of elevation in the comparative short space of 250 miles," he was, of course, unaware of the fact that, between the two bridges, a distance of only *one-tenth* of that mentioned by him, the Abáí falls upwards of 2000 feet. (See 'Journal R. G. S.,' vol. xiv. p. 49.) And if to this be added the rapid fall which the river is known to have between its source and Lake Tsána, we shall have no difficulty in accounting for the whole difference of 6000 feet in 250 miles. [Since this Paper was read I have seen M. Rochet d'Héricourt's 'Second Voyage au Royaume de Choa' (8vo. Paris, 1846), in pp. 316—332 of which work are given various elevations determined by him with the barometer, which are entirely confirmatory of the results arrived at by myself. The Chácha is found by him to have a difference of level of no less than 1294 mètres, or 4245 English feet, in the short distance of twelve leagues.—9th March, 1847.]

† May not Lake Zambeze or N'yassi be the continuation of this series of lakes? In this case it would be simply the upper course of the Nile. N'yassi, according to Mr. Cooley, means "the sea,"—that is to say, the *bahr* of the Arabs and Abessinians, which term is used to signify not only a sea or a lake, but also a *large river*.

far from improbable that even as high up as the fifth parallel of N. lat. its absolute elevation does not much exceed 2000 feet. •

A remarkable peculiarity of most of the principal rivers thus joining the Nile is, that they have a spiral course; so that, after having formed a curve of greater or less extent—mostly, as would appear, round the isolated mountain masses—they return upon themselves at a comparatively short distance from their sources. As instances are to be mentioned the Máreb, the Béllegas, the Abái, the Gíbbe of Bósha (the Zobeé of Fernandes), the Gódjeb and the Shoabérri; and as Ptolemy speaks * of the *snows* of the mountains of “Moézi,” it is far from improbable that the head stream of the Nile has a like spiral course round a lofty mountain mass, similar in character to the snow-topped mountains of Sámién and Káffa.

All the streams of the plateau or western counter-slope of the Abessinian chain are affluents of the Nile, and their easternmost branches take their rise at the extreme eastern edge of the table-land, which is the limit of the basin of the Nile, and the water-shed between its tributaries and the rivers flowing E. and S.E. towards the Indian Ocean. On the seaward side of this watershed, the declivity being much more abrupt and its extent much more limited, the rivers must necessarily be of secondary importance. Thus, proceeding from the N., we do not meet with a stream deserving of name until we come to the Hawásh, and even that river is, near Aussa, lost in lake Abhébbad before reaching the ocean.† The river Haines of Lieut. Christopher,‡ which is the next in succession, appears, in like manner, not to have sufficient power to reach the sea, at least not at all times of the year. Further to the S. we find the river Gowín [*i. e.* Wábbi-Giwéyna§], or Jubb, possessing a substantive character as an ocean stream; but this river, during the dry season, has at its mouth a depth of only two feet.¶ At a short distance to the S. of the equator is the Ózay, which river, though said to be of great extent, has very little water at the entrance.¶ Further S. the same law appears to prevail; as is exemplified in the Lufíji or Kwávi (Quavi), the Livuma, and the Kwáma (Cuama) or Kilimáne (Quilimane), which rivers rise on the eastern edge of the elevated plain in which lake Zambéze or N’yassi is situate, and flow into the Indian Ocean. Here, however, the southern extremity of the basin of the Nile having been

* Lib. iv. cap. ix. p. 115 (edit. Bertii, p. 131).

† ‘Journal R. G. S.’ vol. x. p. 580; vol. xiv. p. 69.

‡ ‘Journal R. G. S.’ vol. xiv. p. 96.

§ See page 46, *note*.

¶ ‘Bulletin,’ 3rd Series, vol. ii. p. 121.

¶ ‘United Service Journal,’ 1845, part i., p. 127. Between Moubasah and Zanzibar, Dr. Krapf found no rivers of any size. See ‘Bulletin,’ 3rd Series, vol. iii. p. 68.

passed, the larger streams of the counter-slope no longer join that river, but take their course westwards into the Atlantic, belonging in fact to a distinct hydrographical basin. Thus the recondite Jesuit, Father Athanasius Kircher, in his '*Mundus Subterraneus*,'* is quite right in substance, if not in form, in placing in "the Mountains of the Moon"—that is to say, in the mountains of *Moézi*—the great *hydrophylacium* of the continent of Africa—the central point of division between the waters flowing to the Mediterranean, to the Atlantic, and to the Indian Ocean.

It has already been observed that several lakes of some magnitude are situate along the axis of the mountain chain—namely, A'shangi, Háik, and Zuwái.† And apparently lake Zambéze or N'yassi is subject to the same law.

This survey of the physical character of the plateau of Eastern Africa cannot be concluded without special attention being directed to a most important practical result which it affords. It is, that the eastern coast of that continent presents facilities for the exploration of the interior very superior to those possessed by the western coast. For, when the narrow belt of low land along the shores of the Indian Ocean—which, from its general dryness arising from the absence of large rivers, is far from unhealthy at most seasons of the year—is once passed and the eastern edge of the elevated table-land is attained, a climate is met with, which is not merely congenial to European constitutions, but is absolutely more healthy than that of most countries. I speak from the experience of upwards of two years passed on the high land under circumstances anything but favourable. Here—that is to say, on the edge of the elevated plateau, and not in the low desert country along the sea-coast—settlers might take up their permanent residence, without apprehensions as to the effects of the climate at any period of the year; while travellers might wait in safety, and even with advantage to their health, till suitable opportunities should present themselves for penetrating westwards into the interior; and in the event of their having to retrace their steps, they would only return upon a healthy and delightful country, where they might remain till the proper season should arrive for their journey down to the coast. On the other hand, the climate of the western coast, even far inland, is notoriously such, that few can long withstand its baleful influences; while a traveller is necessitated to press forwards, whatever may be the time of the year, whatever the condition of the country, whatever even his state of health. And should he, from sickness or any other unforeseen circumstance, be compelled to abandon his journey, he must do so with the painful knowledge, that the further he retrogrades the more unhealthy are the dis-

* Vol. i. p. 72, sq.

† Likewise Lake Abbale? See page 66.

tricts which he has to traverse, and the less likelihood there is of his ever reaching the coast, more fatal than all the rest.

[But while the eastern coast presents advantages of climate so much superior to those of the western coast, its physical conformation renders it impossible that it should possess any river of magnitude, which—as I fondly imagined might be the case with the Gódjeb, when I sent home from Shoa my first accounts of that river—“may be found to afford another high road into the interior of Africa.”* In those instances in which rivers of this description have been supposed to exist, further information has demonstrated the futility of such suppositions. Thus, the pseudo-Kilimáne, or “Kilimanci,” which was believed to enter the Indian Ocean near Melíndah, is shown to be a purely hypothetical river, having no real existence whatever;† while the Jubb or Gowín—the pseudo-Gódjeb or “Gochob”—instead of coming from the north-west, far in the interior of Africa, is now found to be nothing but the Wabbi-Giwéyna, and to have its sources on the easternmost edge of the Abessinian plateau.‡]

It would now only remain for us to follow the course of the Nile downwards along its left or western bank; but upon this subject, from the absolute dearth of information, there is in truth but little to say.

In a letter from M. Gauttier d'Arc to M. Jomard,§ it is stated, on the authority of M. Thibaut, that in lat. 7° 43' N. the main stream, which at this point has its course from the E.S.E., receives three branches coming from the S.E., S.S.W., and S.W. These tributaries are said to be of no great importance, and to *appear* to proceed from the neighbouring marshes. In M. d'Arnaud's map they are represented merely by a small lake or pond (étang), and another is shown in about 7° N. lat. They will, however, require to be more closely examined before it can be positively asserted that they are not streams of some, perhaps even considerable, length. Thence continuing to descend the river, we come at length, in lat. 9° 20' N., to the great western arm noticed by M. d'Arnaud and his companions, to which they attribute the name of Bahr el Ghazál, supposing it to be the same as the Keiláh or Misselád. M. Jomard, in his ‘Observations sur le Voyage au Darfour,’ recently published,|| has entered into an elaborate disquisition on the subject of this branch of the Nile, which he considers to be one of great magnitude, and perhaps equal to the direct stream ascended by the Egyptian expeditions.¶ Should this

* See ‘A Statement of Facts, &c.,’ p. 7.

† See page 17, *note*.

‡ See page 46, *note*.

§ ‘Bulletin,’ 2nd Series, vol. xviii. p. 382.

|| (8vo. Paris, 1845), p. 26, *sqq.*

¶ M. Lafargue entered the mouth of this river, which he describes as a magnificent stream, with a tolerably rapid current. ‘Bulletin,’ 3rd Series, vol. iv. p. 160, *sq.*

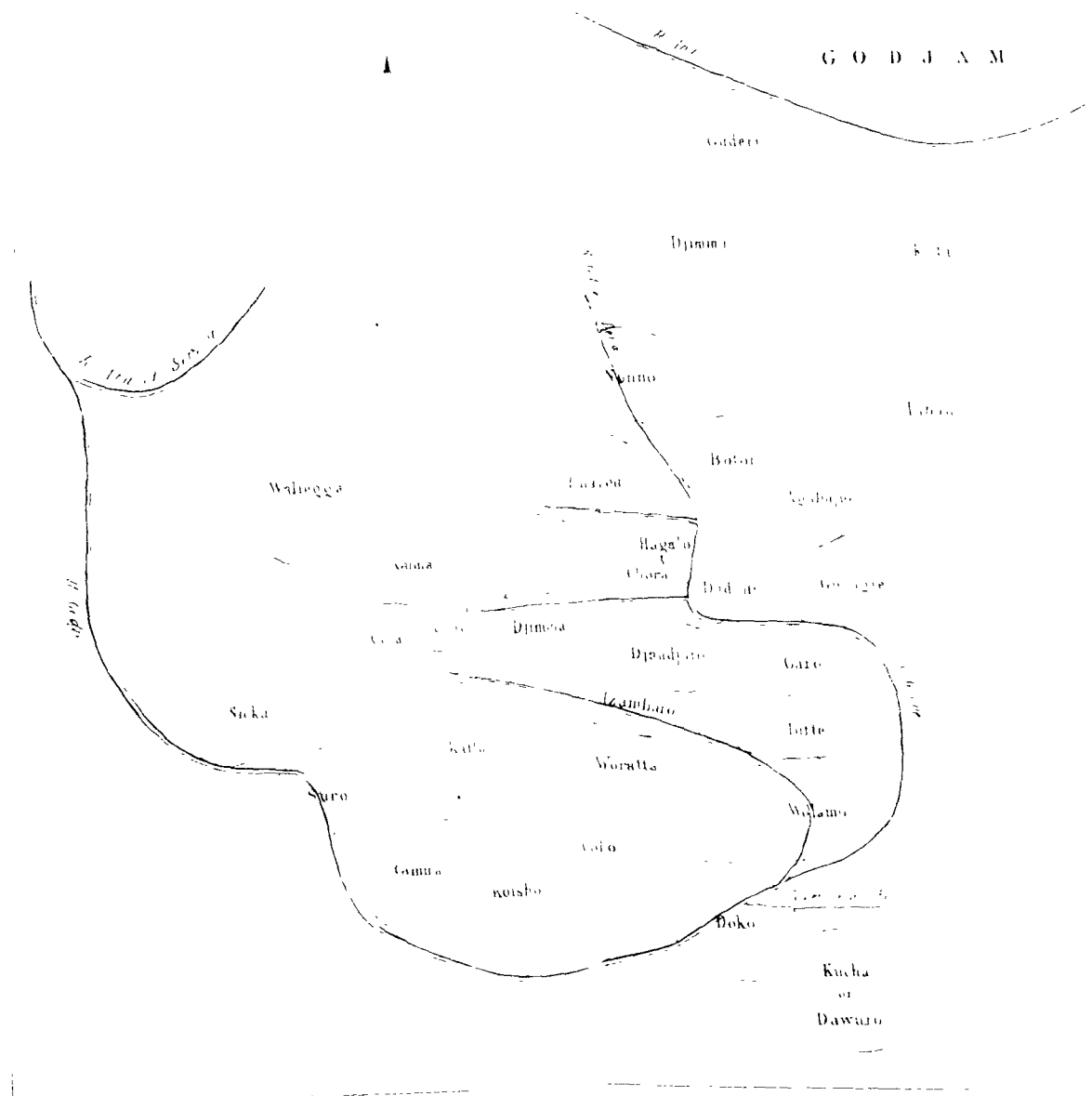
prove to be the case (and indeed it would appear that *this yet unexplored river is Ptolemy's great western arm of the Nile*), a field for investigation is here opened, which is perhaps scarcely less extensive than that which has formed the subject of the present Essay.

My own personal explorations and researches having, however, been confined to the countries watered by the tributaries of the Nile on its right or eastern bank, I am not ashamed to avow that beyond that river westwards is to me almost a *terra incognita*. It is, therefore, a matter not less of prudence on my part to stay my inquiries here, than it is of justice to M. Jomard to acknowledge how much is due to the communications of so diligent an investigator of the course of the Nile.

St. Mildred's Court,
28th October, 1846.

by
Dr. B. E. K. I.

Yonah 3:10

[illegible]

ART. II.—*A condensed Account of an Exploration in the Interior of Australia.* By Capt. CHARLES STURT, in 1844 and 1845. Extracted from his Journal and from Papers transmitted to the Right Honourable the Secretary of State for the Colonies, and by him communicated to the Royal Geographical Society.

[Read 8th and 22nd February, 1847.]

IN 1843 Capt. Sturt submitted to the Secretary of State for the Colonies a proposition for an extensive exploration of the Australian continent, from S. to N. and from E. to W., offering to organize and conduct the expedition. Her Majesty's Government acceded to the proposal, but under considerable modifications; and Governor Grey was authorized to propose to Capt. Sturt an expedition on a limited scale, towards defraying the expenses of which a sum of 2500*l.* was granted. Capt. Sturt assented; and being furnished with instructions by Governor Grey, forthwith proceeded to organize his party and make the necessary preparations for an undertaking requiring at once the most patient perseverance, the greatest fortitude, and the highest moral courage.

The party consisted of Capt. Sturt; Mr. Jas. Poole, assistant surveyor; Mr. John Browne, surgeon; Mr. John Stuart, draughtsman; and fourteen others.

On the 10th of August, 1844, the inhabitants of Adelaide gave a public breakfast to the members of the expedition, immediately after which the main body proceeded towards Gawler Town; Capt. Sturt, however, not quitting till noon of the 14th.

On the 21st, arrangements were made for the future duties of the several persons composing the expedition; the men were assembled, and it was stated what each would be more particularly expected to do, at the same time it was explained that every one would be required to render mutual assistance to his companions; that disputes and quarrelling would be discountenanced, and all intercourse with the natives, but more particularly the native women, was positively forbidden. On leaving Moorundi, Capt. Sturt adds, "I felt it a duty I owed both to myself and to my men, before they finally left the habitations of civilised man, to address a prayer to Almighty God for His protection and guidance. The men stood uncovered around me; and, having concluded it, I directed them to proceed on their journey; and in less than half an hour they had crossed the flat, and were to be seen pushing on slowly but regularly to the N."

Mr. Eyre, having obtained the Governor's permission, joined the expedition to accompany it up the Darling; and through his exertions two influential natives were added to the party. Mr.

Eyre's services to the expedition proved extremely valuable, from the influence he possessed over the natives.

Aug. 24th.—Capt. Sturt and Mr. Eyre quit Moorundi and proceed up the river.

26th.—The night exceedingly cold, and ice found in the pans in the morning. At 7 A.M. the thermometer stood at 32° , having been during the night at 25° . On gaining the upper levels the surface of the country was found undulating and sandy, with clumps of stunted cypresses and fusani scattered over it. Lat. $34^{\circ} 4' 30''$.

28th.—"Rose higher ground at about a mile from where we had encamped. At this particular place the high fossil formation, through which the river has cleaved its way, terminates in numerous spurs, with abrupt stony gullies, instead of the bold and lofty cliffs which generally characterize the scenery of the Murray lower down. In passing along we just cleared the heads of these gullies, having a thick brush of *Eucalyptus dumosa* closing upon us to the left, the soil a soft yielding sand mixed with rounded fragments of limestone." The lake Bonney was reached on the 29th, and the following two or three days were occupied in surveying and chaining its boundaries. The weather continued cold, the barometer standing at 30.66 inches. Capt. Sturt observes on the extremely small number of natives hitherto met with, and attributes the decrease of the population to collisions with the overland parties. Lake Bonney lies E. by S. of a bend of the river in lat. $34^{\circ} 10' S.$, being $2\frac{1}{2}$ miles broad from E. to W. and $3\frac{3}{4}$ miles in length from N. to S., communicating with the Murray by a small tortuous creek named, by Capt. Sturt, Hawker Creek, by which it is annually filled; its shore is sandy, and it is confined by a bank of sand from 25 to 30 feet in height on all sides except the S. The country beyond the lake is a barren desert, consisting principally of cypress ridges and open salsolaceous plains.

Lunar observations obtained Sept. 3rd gave the long. $140^{\circ} 26'$, lat. being $34^{\circ} 12' S.$

Quitting Lake Bonney, the route was through a barren low scrub for about 8 miles, till the Murray was again met with in lat. $34^{\circ} 14'$, where they found an abundance of feed, the soil being of a richer description than generally occurs on the banks of that river. The expedition had to this point proceeded without the slightest disaster, the men contented and cheerful, the animals in excellent condition, and the sheep had travelled admirably. The arrangements of the camp were, that, on halting, the drays were drawn up so as to form three sides of a square, the tents constituting the fourth side; thus the camp became a place of defence, the men safe from surprise, the sheep folded within the square, and the dogs chained to the drays. At sunset a.

guard consisting of three men was mounted, and remained on duty till sunrise.

Sept. 7th.—After crossing an extensive plain of polygonum, the party struck the Cawelli, the largest lagoon on the river. Many natives visited the camp—men, women, and children; and in the evening there was a corrobory. The place is about half a mile from the ground where the volunteers were discomfited, and about a mile from Fort O'Halloran, a neighbourhood celebrated for various tragical events.

10th.—Reached the Rufus, lat. $34^{\circ} 4'$, at the point from which Capt. Sturt proposed sending in advance to ascertain the state of the Ana branch of the Darling, discovered by Mr. Eyre on a recent expedition to the N.; being anxious, if possible, to run up this ancient channel, by which the journey to Williorara would be considerably shortened. Mr. Browne and Flood were accordingly dispatched to ascertain how far it would be possible to keep the banks of the Ana branch; and during their absence Mr. Poole was employed in surveying the lake and the Rufus, the latter connecting Lake Victoria with the Murray. It was at this spot that the natives attacked a party of Mr. Langhorne's, under the charge of Miller, and also Mr. Robinson's party, which latter would have been overpowered but for the timely arrival of a detachment of police sent from Adelaide.

12th.—Mr. Eyre quitted the expedition to return to Moorundi. The influence and authority acquired by that gentleman over the natives is described by Capt. Sturt as quite surprising, "an influence as creditable to himself as it has been beneficial to them: one and all hold him in the highest respect, and regard him truly as their benefactor." The banks of the Rufus, from its junction with the Murray to the lake, afforded most luxuriant feed for the cattle. Lake Victoria, like Lake Bonney, is a shallow basin, enclosed for the most part by barren sandhills, and surrounded by a desert country; it is, however, much larger than Lake Bonney, being about 25 miles in circumference.

13th.—The weather exceedingly cold, and the nights clear and frosty. The winter must be severely felt by the natives, who are without any means of defence against the cold, and many of them are prematurely cut off by pulmonary diseases. About twenty natives visited the camp, and they persisted in asserting that there is no water in the Ana branch, but that at Williorara (Laidley's Ponds) there is a lake larger than Lake Victoria, with abundance of grass around it. The thermometer, tested by boiling water, gave the height of the country on or below the level of the sea.

14th.—Mr. Browne returned to-day. He stated that he had come upon a salt lake about 800 yards in circumference, a third

of which was covered with water, and half the remainder encrusted with crystallized salt; there were also, about 2 miles beyond, two other similar lakes, but dry and without any deposit of salt in them. At about 5 miles from these lakes he struck the Ana branch of the Darling, marked where he came upon it by a line of gum-trees; its course N.W. by W., width about 80 yards, with a northerly current setting upwards from the Murray, caused by the back-floods of that river. At about 2 miles from its junction with the Murray it passed through a polygonum flat, in which it lost its character. The natives call the Darling "Yankee," the Murray "Runka," and the Ana branch "Parè."

22nd.—Reached the junction of the Ana branch with the Murray, and found an immense body of water rushing into it from the river. The country on its banks is miserably barren; in itself, however, it is broad, but its course tortuous and irregular. The whole aspect of the country is barren in the extreme; the magnificent gums of the Murray are no longer seen, and nothing but a stunted box (*Eucalyptus*) supplies their place. The weather exceedingly cold, the equinox having set in with the wind from the S.W. It is evident that the winters are dreadfully severe in this depressed region. Having, however, turned northward, the climate will soon be of a more genial character.

24th.—Crossed the Ana branch close to the head of the water. Here a large black snake 8 feet long sprang at Capt. Sturt, but was fortunately avoided; the men soon put the reptile *hors de combat*; but to the last he showed fight. Gained the Darling at sunset, after a journey of about 22 miles: it was all but dry, with no perceptible current, whilst its waters were opaque and muddy. Many of the flats equalled the richest scenery in England; but during the heat of summer the scene changes, and the very ground on which the grass at this season waves in luxuriant abundance, becomes herbless and bare. Being informed by Nadbuck, one of his guides, that a large encampment of natives was in the neighbourhood, Capt. Sturt adopted the precaution of doubling the guard, so that a sufficient number might always be prepared to resist any attack until the whole party were under arms.

27th.—The Darling hereabouts, lat. $33^{\circ} 43'$, is but a shallow stream. Its channel is still, like that of a canal; an abundance of grass is found upon its immediate banks, but the soil is almost pure sand. Notwithstanding the increased distance from the sea, the boiling-point of water does not indicate a level exceeding 100 feet above that of the ocean.

28th.—About noon a numerous tribe of natives, without women and children, was met with, assembled evidently for the purpose of hunting. For the first time rocks of ferruginous sandstone

were met with in the bed of the river, protruding from the sandy ridges bounding the alluvial flats.

29th.—The journey was resumed at 7 A.M., the course N.N.E., and a distance of 15 miles obtained. The flats of the Darling are superior to those of the Murray, having this peculiarity, that they are entirely free from reeds, and at this season of the year are covered with luxuriant vegetation for several miles. As the expedition advanced, the river became clear instead of muddy, and there was observed a greater rapidity of current, and quantities of bark and grass floating down, covering the surface of the water. The Darling was now rising rapidly, rolling its turbid waters along at the rate of $2\frac{1}{2}$ knots an hour. In one night it had changed from an obscure and lifeless stream to a broad and rapid river, having risen 3 feet above its previous level. Whence this flood came it is impossible to say. There has been much rain in these depressed regions, and it may therefore be concluded a good deal must have fallen on the hills; and it may be that from these the sudden rise has occurred. This rise may be periodical, and not accidental; but it continues, and the river is bringing down large trees and drift. The marks of flood on the trees near the river indicates a rise of 18 feet, which would cover the flats; but they have not the appearance of flooded lands. The line of the Darling does not appear capable of maintaining a numerous population.

30th.—The river last night rose more than 4 feet; and it is now a splendid stream, and looks well in the midst of the dense and drooping timber on its banks. The country, at a short distance from the river, is more open, and from some of the sandridges an extensive view may be obtained; no hills are, however, visible, although if the floods now pouring into the Darling come from the ranges behind Williorara, they must be both extensive and lofty. Course N.N.E.; distance gained during the day 9 miles.

Oct. 2nd.—The river continues to rise, and has made considerable encroachments on the lower levels; it must be discharging an immense body of water into the Murray. The river flats are becoming smaller, although still affording an abundance of feed for the cattle. A meridian altitude gave the lat. $33^{\circ} 14'$.

3rd.—The road this day was over rotten and flooded lands, on which the water had subsided, and whose surface the sun has caused to open and yawn in deep fissures. This ground was much worse for the bullocks than the heaviest sandhills, it being impossible for the drivers to avoid the holes; and the wheels, falling into them up to the very axle, shook the polers to pieces. These flats are an alluvial deposit, a strong, stiff, tenacious clay; a kind of bastard-box (*Eucalyptus*) grows upon their outskirts,

and the polygonum is scattered over their surface, which is sparingly covered with grass. "But few natives have appeared and they are wholly inoffensive: one of these, however, managed to purloin and conceal our butcher's-steel whilst killing a sheep. The theft being discovered, a strict inquiry was commenced, and Nadbuck and Toonda, the natives who accompanied us, were told that, until the lost property was recovered, they would not be allowed any food. On hearing this, Toonda, after speaking to one of the blacks, went to the tree under which the sheep had been killed, and, scooping away with his foot a little dirt, discovered the steel. The thief appeared ashamed, and sneaked off, and the whole party soon left; neither did they follow the camp, owing, in all probability, to the detection of their peculation, and the firmness and resolution shown in recovering the stolen property." At noon a creek was struck, up which the floods were just commencing their progress: this creek, it was asserted by the natives, is the channel of communication between the Darling (Yankee) and Yertello Lake; the latter they stated to be at a considerable distance to the westward. The river continues to rise; the current is now tremendous, with a depth of 16 feet.

5th.—A meridian altitude gave the position, in point of lat. $32^{\circ} 56'$.

7th.—The rise of the river continues at the rate of about 6 inches in the twenty-four hours. Most of the large lagoons passed were filled by the floods, as was the angle of the river at which Mr. Eyre turned back on his recent journey up the Darling. The natives are quiet and well disposed, and the influence of Mr. Eyre evidently extends to this part, and he merits unmeasured praise for his exertions amongst them. "To those exertions," says Capt. Sturt, "more than to our own prudence, must we ascribe the peaceful manner in which we have passed through the tribes. Up to this moment we have not seen a weapon or lost an article, the steel having been recovered. Many beautiful farms might be established on the banks of the Darling, for both its soil and climate are favourable to the growth of the hardier tropical productions as well as to the cereal crops; no blighting winds appear to prevail, and the rains continue much longer than in the neighbourhood of Adelaide."

9th.—"At noon this day our latitude placed us in $32^{\circ} 33'$, and we made somewhat more than 5 miles of northing, so that we are now in $32^{\circ} 28'$ lat., about 2 miles below Laidley's Ponds. About 2 P.M. Mr. Poole observed a low range of hills bearing N.W. by N. with two small cones. The reports of the natives of the Cis-Darling country is not very encouraging. They say that there is neither water nor grass beyond the hills, and that we shall all die if we persist in passing them. This is a

second edition merely of a former story, and I am neither disappointed nor discouraged by it." It had been stated by the guides that abundance of grass would be obtained at Laidley's Ponds; on arriving there it was found that the country was barren on both sides. The grassy flats of the Darling were succeeded by a bare, cold, white clay, which formed the banks of the creek, and extended to the base of the sandy ridges by which they had been approached. Instead of being a mountain stream it was nothing more than a channel of communication between the Darling and the lakes of Cawndilla and Minandichi: the current was rushing into it from the river with great violence, and it appeared to be filling rapidly. The native guides here became no longer serviceable, and Capt. Sturt was from henceforth to rely on his own unaided judgment: their reply to inquiries was, "The bullocks will hold their tongues out, the drays will be upset; you will all die, for there is neither water nor grass on the hills, or a stick to burn." Capt. Sturt adds, "We have now arrived at the borders of the desert which has foiled the most enterprising and the most undaunted of Australian explorers, and have now to try if we can penetrate its recesses. I can only say, that if I succeed in this great undertaking it will be from the guidance of that Good Being on whose aid and protection I have firmly relied."

11th.—Mr. Poole left this morning for the hills, accompanied by Mr. Stuart, taking a week's provisions. The following were a part of his instructions:—"In proceeding on your journey your main object will be to ascertain where there is sufficient water and feed for the animals for a week or ten days; and in the event of your succeeding in this, you will be good enough to return to the camp with the least possible delay, that no time may be lost in moving the party to it. Should you be of opinion that there is sufficient feed and water at the head of Cawndilla Lake, it will be better for you to return, as the advance of the party even so far will facilitate the examination of the hills, and will withdraw the party from the neighbourhood of the river. Should there not be a sufficiency of water and feed at the place mentioned by the natives, at the head of the Cawndilla Lake, you will proceed to the hills, and endeavour to ascertain if there is any valley or any grass at the base of the ranges, where the mountain torrents overflowing the plains cause the vegetation to be more abundant. It is not probable that you will be able to ascend the ranges with the horses, but it will be discretionary with you to adopt any plan you may consider most likely to ensure success on this occasion, and you will be at liberty to prolong your journey if you should anticipate any favourable result, and have provisions to do so prudently; and it will remain with you to act according to your own judgment during your absence, only bearing in mind that the

object of your journey is to find the means of enabling the party to advance, and that to effect this object every other consideration must be abandoned."

Amongst the natives of this part diseases of the eye were very prevalent, several having lost the sight of one; and Capt. Sturt considered them a short-lived people, from their want of protection against the vicissitudes of the seasons.

12th.—Mr. Browne started early with Nadbuck for Cawndilla, to examine the place where the natives state there is abundance of grass and water. On his return at night he reported that both were there, but a mile and a half apart; the former in a belt round the edge of the lake, the latter in the creek Williorara. Immediately opposite to where the party are stationed, on the other side of the Darling, about a mile from it, was Sir Thomas Mitchell's last camp. The dray-tracks and fire-places were still visible; from this point the ranges could not be seen, but only the low sandhills of the Cawndilla.

15th.—Mr. Poole returned about noon, after an absence of four days and a half: his report was by no means favourable.

17th.—The drays started for Cawndilla at 10 A.M. The country to the S. consists of open plains of red clay and sand, with but little vegetation; to the N. from the sand-ridges the eye scans a depressed region darkly covered with dwarf box and polygonum. The whole of the latter is flooded land, and constitutes the bed of Minandichi Lake, which, like Cawndilla, receives the backwaters of the Darling through the channel of Williorara. A portion of this flooded land was crossed by Mr. Poole on his late excursion to the hills, from the summit of which he perceived that it extended far away to the N., occupying nearly the whole space between the Darling and Scrope range. Cawndilla can never be more than 2 or 2½ feet deep, and when full must have a larger surface than Lake Victoria; it presents an immense level to the eye, bounded partly by sandhills not exceeding 25 feet in height, and partly by a dark line of trees.

20th.—This morning Nadbuck made his appearance with two other natives from Lake Victoria bringing dispatches. The weather has become oppressively hot.

21st.—Capt. Sturt, accompanied by Mr. Browne, Flood, Morgan, and Topar, with the light cart, left the camp at 8 A.M., on an excursion to the distant ranges seen by Mr. Poole. At a quarter of a mile they crossed the sand-ridge which separates Cawndilla from Minandichi, and descending into the flats of the latter, entered on plains of great extent, partly covered with trees and brush: course 157° to the W. of S. Soil a red sandy clay, resembling that of the plains of Adelaide, both in its nature and its productions. The trees were generally low, comprising new

species of *Casuarina* and *Capparis*, a few *Hakeas*, and several very pretty and fragrant flowering shrubs. At about 12 miles, the course was changed from 157° to 135° W. of S., which was continued the remainder of the day. From the time of altering the course the ascent became gradual; and at 23 miles, the party having reached the ridge of a sandhill, immediately descended into and crossed the bed of a large dry creek coming from the ranges, and apparently passing into the almost interminable level to the W. Here were seen four beautiful hawks resembling sea-gulls. Topar showed the way to a native well at the foot of a gum-tree, about 4 miles higher up the creek, where the party rested. Into this well, covered with branches, the gravel had fallen, so that it became necessary to clear it out, and, after all, the supply of water proved insufficient.

22nd.—Having been assured by Topar that another and a better well would be met with about 4 miles higher up the creek, started at 5 A.M., taking the right bank, having an open barren country to the S. To the N. all appeared sterile, nor was there a sign of vegetation but in the bed of the creek, the course of which was marked by a line of gum-trees, as is the case with every watercourse in the interior. Arrived at the well, a plentiful supply of water was obtained, but it was bitter, from the gum-leaves, and when boiled became as black as ink.

23rd.—Capt. Sturt, having reason to be dissatisfied with Topar, and no longer reposing any confidence in him, determined on following his own route, regardless of his guide's remonstrances. Reaching the base of the ranges at 10 A.M., they ascended the summit, which was more level than had been anticipated, with some appearance of fertility; descending the range on the opposite side, and crossing the head of a creek in which there was a small pond of water, they began to mount the opposite range by a stony watercourse. From the summit of a hill commanding an extensive view nothing cheering could be seen either to the N. or N.W.; everything below was dark and dreary, nor could any indication be perceived of creek or watercourse. Water boiled at 210° . Returned to the creek at 6 P.M.

24th.—Proceeding up the creek, appearances improved; several large water-holes were passed, and there was found feed for the cattle sufficient for some time. The course of the creek was straight, and at 7 miles it entered the ranges, having hills on either side of it. Having passed the ranges, and gained their northern base, an extensive plain was discovered, Coonbaralba bearing $N. 45^{\circ} E.$ Leaving some detached hills on the left, the course became N. by E., and at 3 miles ascended a small isolated hill (which the men named Piesse's Nob) of very remarkable appearance, with large blocks of rock in a confused heap on its

summit, which were found to consist of magnetic ironstone. The needle being placed on one of these rocks to steady it, deviated 48° from the N. ; and it was only by raising the compass considerably that it could be made to act.

25th.—Having ascertained that a sufficiency of water and grass could be obtained for the supply of the camp, the party returned thitherwards, travelling during the day about 30 miles, under a temperature of above 100° Fahr.

26th.—A sudden squall of wind from the N.W. came on about daylight, carrying everything away before it : the weather became bitterly cold, and the return to the camp was severe and chilling ; the wind fairly blew through the clothes, and swept over the plains with a force and severity not to be described, so that the party were almost perished. The thermometer on the preceding Friday had been at 110° in the shade.

29th.—The horse-team having been yesterday sent in advance under Mr. Browne's superintendence, to prepare wells for the cattle, the party set forward early ; about noon a pit was dug, from which during the day 1300 gallons of water were drawn, the ordinary daily consumption being not less than from 1100 to 1200—an enormous quantity to supply in such a region. The hole was dug at the foot of a rock, and was only a spade deep, the water filtering through the gravel of which the rock is composed. The cattle did not suffer so much as the horses, but the dogs felt the heat most severely, and one sheep died from a coup-de-soleil.

30th.—Capt. Sturt, considering that it would be preferable to push on as rapidly as possible for the point at which he proposed stationing the camp, rather than to reach it by short stages, directed an early start this morning, and fortunately fell in with a pond of water, where, stopping to breakfast, the animals were rested, and about 5 P.M. reached the long water-hole. Here three natives were found, who stated that there was a well-inhabited country to the N.

Nov. 2nd.—Mr. Poole and Mr. Stuart went to the hills on the right of the creek, while Capt. Sturt and Mr. Browne rode up it to take bearings ; Mr. Browne, having been attacked with low fever, was compelled to return : following the creek into the plain, another beautiful pond of water was discovered, a circumstance which afforded much satisfaction, as ensuring the safety of the cattle. The weather oppressively hot and disagreeable, although the thermometer does not indicate a very high temperature ; the barometer lower than at any previous period, indicating, in any other climate than this, an approaching storm. The sky cloudless, and the wind from the N.E., and even cool, but the excessive lightness of the atmosphere acts upon the system as if it were oppressively hot.

4th.—Left the long water-hole and its dusty precincts this morning, and established the camp in a free open space in the midst of the hills.

5th.—An excursion to the N.W. having been determined on, Flood, Morgan, Lewis, and Sullivan were sent on with the horse-team at 9½ A.M. They were directed to deposit a tin box containing 80 gallons of water at 25 or 30 miles' distance, taking also with them 46 gallons in casks. Their course was to be 140 to the W. of S. until they were overtaken by Capt. Sturt and Mr. Browne, who followed in the light spring-cart. From the camp the plain was traversed for about 5 miles, when a slight ridge was crossed; at 2½ miles further a small stony range was passed, the principal range being about 2 miles in advance. Gaining the summit of a hill on foot, a full view was obtained of the impracticable nature of the country towards which they were moving; and as there was a watercourse at the foot of the hill, trending rather to the S. of W., which appeared to join a creek coming from an opening in the ranges, the party proceeded to trace it down, in preference to continuing the previous line of route. An elevated table-land appeared to have been gained, through which the hills protruded; it almost seemed as if all the ranges had at one time been of equal height, and that the valleys had been filled up to a certain level, now forming a plain proportionably higher than the plains crossed in approaching the ranges.

6th.—Sullivan and Lewis returned to the camp this morning, Capt. Sturt and Mr. Browne proceeding to the summit of a hill of considerable height (Lewis Hill), about 3½ miles from the halting-place of the preceding night. From this point a very extensive view was obtained, and the character of the country more accurately ascertained. It became obvious that it was an elevated table-land, traversed by numerous rocky ridges, seldom or ever exceeding 600 feet in height from the level of the plains at their base. Not one single cheering feature displayed itself. Barren as the country was, there was much grass upon this hill, with kangaroo-grass in the watercourses. Rejoining Flood with the cart, the course was N.N.W., when a thick scrub of the *Eucalyptus dumosa*, on the summit of a range backing the one last crossed, presented itself; breaking through this, an effectual barrier of steep dark gullies and ravines stopped all further progress in that direction. The hill-formation had undergone a complete change; basaltic rocks, passing into slate, presented themselves on all sides. A small bright pool under a rock, which was deepened and enlarged, afforded the clearest and purest water met with for some time.

7th.—Quitting the rocky water-hole about 8 A.M., and pursuing the course of the creek, several water-holes were found; but the

bed of the creek had become so rocky as greatly to obstruct the advance. The valley or glen expanded for a short distance, but again contracted, and the steep rugged sides of the hills closed nearer and nearer. At one spot, where there was a native well, the remains of a large encampment of natives was discovered. About 2 miles from this last sleeping-place, the rock-formation turned to a coarse granite, traversed by veins of quartz; large slabs of it stretched across the creek, and immense fragments impeded their progress. At length, from the numerous boulders, it became impossible to lead even a horse any further. Flood ascended one of the hills to discover, if possible, any leading ridge by which the route might be pursued, but the line of hills ran across the course; he however thought, from what he could see, that there was a finer country beyond the hills, and he stated that there was a lofty hill about 3 miles to the eastward, from which the country might be more accurately surveyed. Leaving the horses, Capt. Sturt and Mr. Browne started on foot for this hill, the summit of which was gained in $1\frac{1}{2}$ hour; nothing satisfactory was discovered, although the view to the N.W. was very extensive. Nothing could exceed the barrenness of the ranges, which extended nearly N. and S., forming a dark line, and bounding the level country below them as with a steep wall. The nearer plains were open, and appeared to have some little nutritious herbage upon them; but the exact character of the vegetation could not be ascertained. Beyond the plains, an unbroken line of scrub extended to the horizon, as dark and gloomy a prospect as man ever looked on; the forests in nowise resembling those of England, diversified by a variety of hues, but presenting a single shade of brown, while a stillness the most profound reigns through these dreary deserts. A large hill bore 7° to the E. of N., and observations gave the position $31^{\circ} 32'$; boiling-point $210^{\circ} 25'$.

8th.—Mr. Browne and Flood started at 7 A.M. for the purpose of endeavouring to discover some practicable descent into the plain; they fortunately hit upon apparently the only available spur, and on reaching the plains turned northerly, along the base of the ranges, until they struck the creek, in which there was an abundant supply of water and grass. The aspect of the plains was better than had been anticipated, and some low hills were observed to the N.N.W.

9th.—Early this morning the party proceeded by the descent discovered yesterday by Mr. Browne, and with care the cart was safely got down to the plains. On looking back at the dark mass of ranges, they were seen to extend as far as the eye could reach in a N.N.W and S.S.E. direction, forming semicircles like bays, and having all the appearance of a coast-line. The course was now half a point to the E. of N. Some prickly acacias in full

blossom, a tree resembling a Banksia, and a new Polygonum were found on the western slope of the ranges.

10th.—Started at early dawn, observations showing the position to be $31^{\circ} 23'$. Finding that the creek (named by Capt. Sturt, Campbell Creek) turned too much to the westward, crossed it, and struck across for the hills to the N.N.W., nearly parallel to the ranges. For a few miles the travelling was good and firm, over sandy plains mixed with clay; at length the ground became covered with pebbles of quartz, ironstone, whinstone, and granite; it appeared as if McAdam had thrown there every cart-load of stones he had ever filled, so much did the surface of the ground resemble a newly metalled road. A line of undulating hills to the left, composed of ironstone, shut out all view of the N.W. horizon. At 4 P.M. some gum-trees were observed, indicating the course of a creek (Morphett Creek); on nearing them, some cockatoos were seen, and also the tracks of an emu. Arriving at the creek, there were appearances of water at no great depth; and on scraping off some of the surface-gravel the ground was found so moist that digging was commenced in right earnest, and shortly a good hole of water was obtained, from which the exhausted animals were freely supplied. The gravelly and sandy bed of this creek proves that it comes from ranges of the same formation as those lately crossed. It issues from a large semicircular opening in the hills resembling a bay, the range itself having the appearance of a coast-line, with all its indentations and projections. Boiling point 211° . Hitherto the course had been N.N.W., but for the last two days clouds, such as hang over large waters, were observed in the N.W., in the direction of Lake Torrens, and the course was accordingly changed to that point.

12th.—The country now began to improve; the soil was still red clay and sand, but some very fine flats intervened between the ridges, and water alone was wanting to make the place habitable. Both ridge and flat were covered with grass; box-trees (Eucalypti) were scattered over the flats, and on the ridges the Hakea grew an ornamental tree. These favourable appearances were but of short continuance; the cypress ranges became closer and heavier than before, and the flats again presented salsolaceous productions only. At noon the horses were fagged and overpowered with heat, and as any further advance would have been injudicious, Capt. Sturt commenced retracing his steps; but in order that every possible knowledge of the country might be obtained, Mr. Browne and Flood were directed to advance some 15 or 20 miles, and to rejoin the party at the muddy water-hole.

13th.—Morgan killed an emu, which, however, kicked the butt of a carbine to pieces with a single blow. The weather proved terrifically hot, and Mr. Browne and Flood rejoined at 5 P.M.

On leaving yesterday they kept N.W. for about 10 miles, and from an elevation they judged they could see 10 miles further. At 4 miles from the point from which they started, the sand-ridges all but terminated, and an open grassy country succeeded, extending as far as the eye could reach. The soil was the same, but there was more of vegetable decay on the surface, the herbage was green and abundant, and they passed several flats upon which there appeared to have been water but a few days before. The remains of four native fires were found at regular intervals, as if leading to some place; further N. ridges trending to the N.W. were seen. The results of this excursion were on the whole satisfactory, it being clear that the same barren country upon which Mount Serle looks down does not exist here, and it is also manifest that the sole impediment to travelling is the want of water. "We are now 150 miles to the westward of the Darling, on the N. side of the ranges which lie between it and Lake Torrens, and, if the hills continue, we may advance with a light party to an equal distance into the interior, with the certainty of finding water at their base. We have discovered two large creeks, with a supply of water in them sufficient to give us time to examine the country well, and to bring the whole party over the ranges."

14th.—Blowing a hot wind, the thermometer at 108° in the shade; the heat intolerable, and the flies absolutely unbearable.

17th.—A heavy thunder-storm with rain occurred yesterday; dense clouds came from the N.W., and the sky was generally overcast. "Reached the tents at 5 P.M., having ridden about 47 miles. Found Mr. Poole better in health, and learnt that affairs had proceeded favourably during our absence. Some natives had visited the camp, who intimated by signs to Mr. Poole that there was plenty of water to the W. and N.W. They did not remain, but proceeded to Cawndilla to fish, so that it would appear that the present rise in the Darling is periodical, and that the natives are collecting from all quarters on the creeks and lagoons.

19th.—The weather does not appear to have taken up, for although it has not rained during the day, the wind is high and cold, blowing from the S.E., the opposite point from that at which the rain commenced."

20th.—At noon Mr. Poole, accompanied by Mr. Browne and Morgan, with a pack-horse and a fortnight's provisions, quitted the camp on an expedition. The following formed a portion of Mr. Poole's instructions:—"It appearing more than probable, from the observations made on the recent excursion from which Mr. Browne and I are just returned, that if we could have secured a supply of water to have enabled us to get onwards for a day or two longer, we should have arrived at the brink of some extensive inland waters; and the late rains holding out every

encouragement for us to make a second attempt to reach it, I consider it desirable that you should proceed into the interior, so soon as the plains shall be dry enough to admit of your doing so, with a view to ascertaining whether the conclusion at which myself and Mr. Browne have arrived is correct or not. You will be good enough to take a N.W. course, as the one which I think most likely to lead you to a decisive point; but should any fresh feature in the country, of which I am not aware, show itself to you, and you should be of opinion that, by deviating from the course I have laid down for you to pursue, you will be furthering the object of the expedition, you will use your own discretion.

“Should you arrive at an inland sea, or a body of water the extent of which you cannot ascertain, you will take advantage of any neighbouring eminence to obtain the fullest view of it for my future guidance, and you will proceed to its shores to ascertain whether its waters be saline or fresh. Should the supply of water which I hope the late rains will have secured to you fail, or should you find that the rain has not extended so far to the N.W. as to enable you to go to a distance such as will be conclusive on the points to which I have drawn your attention, you will use your own discretion either to return to the camp or to make for the ranges, and return along their flanks. In the latter case, you will examine any creek or watercourse on which you may fall, in order to ascertain whether there is a sufficiency of water and feed to enable me to move the party higher up to the N., the object of the present expedition being to avail ourselves of the late rains to push into the interior as far as possible, that, by ascertaining its nature and character, we may regulate our future proceedings. Having every confidence both in your discretion and judgment, I leave much to yourself, and I authorize you to deviate from these instructions where you may feel it necessary, and consider that you have reasonable grounds for so doing,” &c.

21st.—Mr. Poole had not been more than 2 hours on his journey before it began to rain, and this continued without intermission the remainder of the day and night. This morning the creek was up, and had a broad sheet of water in it, and every water-hole was filled to the brim. The ground was now in such a state that the drays could not be drawn over it, and the advance of the camp was necessarily deferred.

22nd.—A strong wind has surprisingly dried the surface most rapidly, so as to enable an advance. Whilst the men were yoking the oxen, Capt. Sturt rode to the ironstone range, the summit of which he found was crowned with large rocks; the N. point of the compass deviated 45° to the eastward from its proper bearing. The drays made but slight progress, in consequence of the heavy draught. The route was on the left bank of the creek. Although

there had, within a few days, been so much water in the creek, and a rain had since fallen so abundantly, there was not now a water-hole in its bed, the thirsty soil had drunk the whole, nor could more than a scanty supply be obtained by digging. Boiling-point 210° .

25th.—Continued the journey up the creek, the ground being still too soft on the plains. Ascended Lewis Hill to survey the country. The range dividing the eastern and western waters shoots its lateral branches into the broad table-land on which the party were now advancing. Boiling-point on Lewis Hill 210° ; on the flat-topped hill (Mount Robe) 209° . An abundance of grass was found in all the valleys, and the general aspect of the country was cheering and picturesque; from its large proportion of waste and unproductive lands, it must, however, be deemed a barren wilderness; nevertheless, it would support a population sufficient to form a connecting link between the province and any better country to the N. At this season there is an abundance of spear-grass both on the hills and plains; there is also much clay, the decomposition of the ranges mixed with the land, but no vegetable deposit. The timber is stunted and useless, and the other productions of the plain are mostly salsolaceous. The beds of the creeks are entirely of gravel and sand, washed clean by the force of the winter torrents. So dreadful was the annoyance from the flies, that they absolutely hindered the occupations of the whole party.

27th.—In consequence of the pole of one of the drays snapping, all progress was retarded yesterday; this day descended into the plains at 1 P.M., and reached the first creek at 6. The bullocks suffered from the extreme heat; the sheep refused to stir, and the dogs collected under the shade of some trees.

28th.—Flood, Sullivan, and Joseph were sent to the second creek (Morphett Creek) to make a pond for the cattle, and to dig a well. A day of intolerable heat: the thermometer in the shade at 2 P.M. stood at 113° , and at sunset at 100° .

29th.—Quitted the first creek (Campbell Creek) for the second at 4 A.M., the distance being more than 25 miles; the course was N. by W., at about 4 miles from the ranges; re-established the camp at a distance of about 80 miles from the last camp. In the evening the wind commenced blowing heavily from the S.S.E., and the weather became extremely cold, the temperature having undergone one of those singular changes to which this region is subject, when the mercurial column ascends or descends 50° in an hour.

Dec. 2nd.—Flood was dispatched early this morning along the base of the ranges, to see if he could find water to enable the camp to move northwards. "Slowly as we may appear to travel,

neither horses nor bullocks could have done more under such a temperature; and it is only by fostering their strength that it is possible to push them hard when occasion requires; the greatest precaution also is necessary in such a country as this: and had Flood not found water in the small creek, a retreat would have been unavoidable. Our present position is full 200 miles to the westward of Fort Bourke, and about 30 S. of Mount Serle, with every thing to hope for in front, and nothing to apprehend in our rear." Flood returned in the evening, having found water for temporary purposes only; he thinks, however, that there are several large creeks more to the N. While riding out to-day, Capt. Sturt came upon heaps of rounded stones, with large boulders amongst them: the whole surface bore the appearance of a sea bottom: immediately under the hills to the westward there was a line of sandhills. One peculiarity marks the deposit of stones on the main ranges and on the plains, namely, instead of being mixed promiscuously together, the fragments of each rock occupy distinct patches,—the quartz one, the whin another, the ironstone another, chequering the ground like a chess-board; and it would almost appear as if immense blocks of each rock had been brought to these places, and there shivered to atoms. Mr. Poole and Mr. Browne returned to the camp. During their absence they had struck Lake Torrens, and it would appear that the water is not so salt at this end of the lake as at the broad part to which Mr. Eyre descended; it may be, therefore, that there is a great body of water to the N.W., of which Lake Torrens is the estuary. The appearance of the country was one sandy desert, undulating, but so uniform in colour, that it would be impossible for any one looking down upon it to observe its inequalities.

3rd.—Flood succeeded in striking a very fine creek with abundance of water in it, and at no great distance from the camp.

5th.—Flood and Mack, having been sent on the 4th to search for water, returned this afternoon, having found a large creek coming from the ranges, with an abundant supply of water, and feed in the adjoining acacia scrub. It is not, he reports, more than 40 miles in advance. He saw three native women, the first met with in this dreary region, but he did not approach them.

8th.—A thunder-storm in the morning, but the clouds and the rain hung to the ranges.

9th.—Moved this morning at 7 A.M. on a course somewhat to the E. of N. over the barren, stony, and undulating plains. Made about 22 miles, and halted for the night on the banks of a small creek.

10th.—Reached the creek (named Flood Creek), and found it very superior to any hitherto discovered. "Here we may remain

for months without any fear of a deficiency of water, should the northern interior be found impenetrable at this season of the year."

11th.—Mr. Poole and Mr. Browne, with Mack, started this morning, having a fortnight's provisions, with general instructions to traverse the country to the N.E. Flood was also sent along the base of the ranges. Capt Sturt proposed himself going to the eastward of them, to ascertain from what sources all the surrounding creeks are supplied. Capt. Sturt observes, "We are gradually but firmly making our way into the interior, and, with the blessing of Providence, shall, I trust, raise the veil which has so long obscured it. Up to this period we have had nothing to disturb the tranquillity of our proceedings. No natives have been near to embarrass us, nor have we as yet felt the want of either water or feed. Yet I am sensible that this prosperous state of things may change, and I feel that any hasty or imprudent step would cripple my means or exhaust my forces. It is marvellous to me that this part of the interior is not inhabited; for, although it be a desert to civilized man, it must be very different to the savage, for here there is abundance of food for them; birds building in the most exposed situations, emus on the plains, and the bark of the trees rough with the tracks of the opossums. Where, then, are its inhabitants? Are they gone to a better country, or does the stony and burning nature of the ground drive them from their haunts at this season of the year? Another peculiarity marks this distant region; all vegetation still looks green and fresh, and the grasses which have long since shed their seed in Adelaide are not yet ripe here. Amongst them is a rye-grass that will, I have reason to think, be valuable; there is an indigenous wheat, which, by cultivation, may turn out well, although the seed is small; and there is a fine oat. This might therefore with propriety be termed the Cereal Creek, to mark the character of its vegetation."

12th.—About ten last night a most tremendous squall came on, which in a moment levelled every tent in the camp, and bent the trees to the earth.

A small party of natives came to the camp, but they manifested great alarm, and remained but a short time, although every kindness was shown to them; they were miserable looking creatures, possessing neither the elasticity nor the firmness of the savage.

13th.—Wishing to ascertain the nature of the country to the eastward, Capt. Sturt left the camp with Mr. Stuart and Flood, pursuing a course to the hills somewhat to the S. of E. From one of the highest of these, three detached ranges of hills were seen to the eastward, at a distance of at least 40 miles, an immense

plain intervening, dark with brush at its further extremity. Descending from the hills, the party advanced about 8 miles, halting for the night without water.

14th.—The wind blew so keenly that the party were glad to keep on their great-coats. Crossed level plains with much grass for the first 14 miles, traversing the beds of several dry lagoons and hollows. Appearances clearly demonstrated that the whole of this part of the country is under water in the winter season. Entered a dense brush of cypresses, acaciæ, and hakeæ for 16 miles. The temperature changed, and the atmosphere became oppressively close. Arrived at a naked sandy mound, a view was obtained of the hills towards which they were advancing, on reaching which the view became most discouraging; not a spot of green was to be seen, and the hopelessness of obtaining water, of which they had been deprived during the preceding 28 hours, induced a return to the camp. Turning, therefore, to the westward, after a progress of 8 miles, encamped for the night.

16th.—The morning-star had scarcely risen when the party mounted, anxious to get the horses to water. Crossing the plains, struck a creek at 8 A.M., running up which, in about a mile a small pond of muddy water was discovered; by boiling, this became clear, and supplied the wants of the party. Returned to the camp by a N.W. course, thereby avoiding the hills.

17th.—This is the country of winds and whirlwinds; it always blows hard, let the wind come from whichever point of the compass it may.

18th.—Flood brought in part of a cucumber-vine which he picked up on the creek; he stated that there were several fruit on the stem. There are a number of night-birds here, which make the most uncouth noises during the night, but fly about during the day like common birds.

19th.—Capt. Sturt with Mr. Stuart and Flood went down the creek to examine it: thermometer at the camp 110°. The creek continued for 9 miles, when it was lost in the pine-scrub. This afternoon a comet was observed a little to the S. of W. It was small and dim, with its tail inclined to the W.

21st.—A day of extreme heat; the thermometer 113° in the shade, with a hot wind from the W. The men generally complain of disordered bowels and sore eyes. Seeds are fast ripening, but it is extremely difficult to secure them; the seed-pods ripen in a day, and a single blast opens them all.

25th.—This afternoon Mr. Poole and Mr. Browne returned; they had reached to within 5 miles of the 28th parallel, and had not only found water, but had ascertained that the ranges continue to the N. They came back in good spirits, but their horses had not a leg to stand on, having been amongst broken stony ridges,

where they had lost their shoes; added to which, the weather was exceedingly hot, and they had had no water the last day. Mack, who went with them, lost 14 lbs. in weight. The following is a condensation of Mr. Poole's report:—“Left the camp on the morning of the 11th, followed a N. course for 3 miles, but, seeing that it would lead into an acacia scrub, changed it to N.N.E., and at 12 miles found a small pool of water, at which the party encamped, having travelled 15 miles over a barren stony country. On the 12th, started at 6 A.M.; at 2 miles saw distant ranges, and at 3 entered the acacia scrub. At 15 miles crossed a creek, the course of which was to the S.W., with box-trees and polygonums, but no water. At 6 miles from the hills, saw several places where the natives had been preparing acacia-seeds for food, the pods having been threshed out. At 5 P.M. reached the hills, the acacia scrub extending to within half a mile of their base. Found no water, and encamped in a gully. Ascended a hill, and from it saw gum-trees in a plain N.W., affording hopes of finding water in the morning. 13th. Left the gully at sunrise and made for the gum-trees, struck a creek with no water in it, but observed numerous flights of pigeons, all going to the N.W. Followed the course of the creek, and at 2 miles found a place where the natives had been digging for water; scraped a well which afforded a sufficient supply. After breakfast moved to a second creek, and at 2 miles encamped, on account of the horses being jaded. 14th. Took bearings, being in lat. $30^{\circ} 10'$. At 6 A.M. left the camp for a hill, which Mr. Poole named the “Magnetic Hill” (Mount Arrowsmith) from its turning the needle from the N. to within 3° of the S. point. Saw several hills to the N. and N.N.E. Descended and steered for a table-range, which was reached about 2 P.M. Followed down the creek to the eastward for 10 miles; found water and encamped, having travelled 35 miles. The country consisted of open plains, covered with rounded stones and quartz. 15th. Changed the course to N.E. through the scrub for 3 miles. The creek we were now on joined another with gum-trees in it, and at a short distance up this creek found a large supply of permanent water, at which we stopped for the night. Mack went up the creek, and reported that there were several large ponds of water. The appearance of the country barren, the plains stony, the hills of volcanic formation, with gypsum. Lat. observed, $29^{\circ} 47' 35''$ S. 16th. Followed up the creek, and found from 15 to 20 large holes of water. The horses were now beginning to suffer in their feet from the stony nature of the ground, their shoes being worn through the centre. The rock formation changed to porphyry. Distance travelled about 23 miles. 17th. Followed the creek for 5 miles, changed the

course to N. for some distant hills; the creek turned to the E.; at 20 miles struck a creek with large water-holes in it; this creek differs from those previously met with, its waters being muddy, and little or no grass in it. At 10 miles further struck another creek, where we encamped for the night. In consequence of the stony surface travelled over, the horses lost their shoes, and were becoming lame; the hills still distant about 12 miles. Resolved after ascending these hills to return home. 18th. Leaving Mack in charge of the horses, ascended the range between 9 and 10; saw ranges to the N. and N.E. From this point the range appeared to trend to the N.E., the scrub following the line of the range as far as the eye could reach. Took bearings and returned to the camp. Followed down the creek to its junction with the main creek in a N.E. direction; followed the main creek for 5 miles; the banks low, the flats similar to those of the Darling. The natives here appeared to be numerous, 27 fires being found at one encampment. 19th. Followed the banks of the creek E.S.E.; the day exceedingly hot, the birds overhead gasping. Found a muddy hole of water, at which we encamped for the night, having travelled 25 miles. 20th. Continued along the bed of the creek through the ranges, but found no water; from the summit of a small hill traced its course to the N.E. for some miles. Left the creek on a course S. by W. At 14 miles changed to S.E., and at 2 miles struck a creek, and found some water at 18 inches by digging. 21st. Followed this creek for 2 miles, left it for one of its branches in a S.W. course, then proceeded S.W. for the White Hill range, which was ascended to take bearings. At 6 miles struck the main creek: course N.E. and S.W. 22nd. Changed the course to the S. of W., struck the main creek and followed it for some distance; found abundance of water, and encamped. As the animals required rest, travelled 15 miles only. 23rd. Followed a S.E. by S. course over open plains covered with stones, the magnetic hill being to the S.W.; encamped on a small creek about 8 miles E. of this hill. Distance travelled, 35 miles. 24th. At 8 miles struck the first encampment; at 3 P.M. entered an acacia scrub; course S.W.; at 6 miles encamped; no water for the horses. On the 25th started at 5 A.M., and reached the camp at 4 P.M."

Mr. Poole returned with sore eyes, and was otherwise indisposed. From the above account it was evident that the camp might be moved 80 miles higher to the N. without any fear of the supply of water failing.

28th.—This day the tents were struck and the party resumed their journey. While Mr. Poole led the way, Capt. Sturt with Mr. Browne and Mr. Stuart ascended a lofty hill to the eastward to take bearings; they were now on the highest point of the last

of the ranges of the chain, and yet were in the very centre of barrenness. At 8 P.M. halted until the moon should rise, having travelled about 12 miles. At a quarter to 10 again advanced on a N. course. At daylight Mr. Poole caught sight of the hills, but in the obscurity of the early morn he had taken bearings of the wrong hill, and they got insensibly deeper and deeper into the pine ridges. Hoping that it was only a narrow belt, they pushed on, but the exertion was too great in that heated and inhospitable desert. In vain did the drivers force the bullocks over one sandhill after another, they were like the successive waves of a stormy sea. Mr. Poole was sent on to water with the horses and sheep, Capt. Sturt and Mr. Browne remaining with the teams. Shortly after arrived at a salt lagoon, on the other side of which were the sheep, unable to move further. Here it was determined to leave two of the drays, in the hope that, by putting two of the teams in one, some progress might be made, but even then it was very slow. Mr. Poole's track leading deeper into the forest, Mr. Browne was sent to the eastward to ascertain its extent in that direction, and it appearing to terminate at $\frac{3}{4}$ of a mile, the course was changed thitherwards. The bullocks were completely exhausted; they were therefore unyoked, and, leaving all the men but Mack with the drays, Capt. Sturt drove them on to water. Guided by Mr. Browne, they cleared the sandhills at dark. At the end of the brush one of the bullocks fell, and at about 3 miles from the creek a second dropped. Having reached a water-hole, the remaining bullocks obtained relief, and Capt. Sturt and Mr. Browne rest, having been on horseback 36 consecutive hours. The westerly course had caused all these difficulties, but, adds Capt. Sturt, "I am not surprised at Mr. Poole's being deceived by the appearance of the hill, for in those dense brushes he was unable to get a second bearing."

30th.—Water was sent to the nearest bullock, but he was already dead; the sheep all arrived safely at 11. "It is remarkable that, notwithstanding the extreme heat of the days, the nights are exceedingly cold, insomuch that we are compelled to put on heavy coats. We last night gradually crept into the fires, and to-day the thermometer stands at 106° in the shade. Mr. Poole and Mr. Browne are both complaining of illness, and some of the men are suffering from inflammation of the eyes."

1845, Jan. 2nd.—The three drays reached the creek at 3 A.M., both men and animals worn out with fatigue. At daylight they proceeded to the well which had been dug, and by 9 they were much recovered. The men stated that the heat had been so intense that, when they stopped, the poor animals pawed the ground away from the surface to get at a cooler bottom. Mack's boots were so burnt that they cracked, and Lewis, who foolishly exposed his back to the sun, got severely punished. The dogs

lost all the skin off the soles of their feet, and could hardly crawl; one of them, indeed, fell in the rear and must have inevitably perished.

3rd.—The sheep have turned out a most valuable stock, and are so exceedingly quiet as to give no trouble; their fleeces are as white as snow, and they are in excellent condition.

6th.—The heat is so great that, notwithstanding the wheels of the drays were lately put in order, the tires have expanded so much as to render it necessary to wedge them before moving on. The men are complaining, and the water is so bad that serious consequences are to be apprehended from remaining here even a day or two longer. There has been little change of weather for the last month; the wind blows from the S.E. in the morning, but follows the course of the sun; towards noon it rises, and at sunset moderates.

7th.—The drays being ready, the party would have moved, but so terrible was the heat that it was impossible to stir before 5 P.M. Up to that time the iron bows of the bullocks were so hot that they would have burnt the animals' necks. Reached the creek at 10, keeping the bullocks yoked that there might be no delay in the morning. Near the water-hole just left there were some native huts of a very superior kind; instead of the usual flimsy habitation of boughs, these huts were arched over with strong limbs of trees, on which a thick thatch of grass was laid, and over this a quantity of soil, so as to render the habitation both air-tight and water-proof. The entrances were of an elliptic shape; each hut had a smaller one attached to it, in which probably they deposit their nets and stores.

8th.—Starting at 5 A.M., the journey was concluded an hour before noon, thus avoiding the extreme heat of the day. On arriving at the creek, the fires of some natives were found still burning. As soon as the camp is established, Capt. Sturt will himself proceed to the N., having ordered Flood to start tomorrow to seek a good line of road. The fall of the creeks hereabouts is to the eastward, but, however promising their appearance may be, they all terminate on the plains, either by spreading over them, or else filling some shallow basin, which for a time assumes the character of a lake or a lagoon, but is soon dried up by summer heats.

10th.—Flood having succeeded in finding tolerable ground to move over, left their position for the main creek, crossed by Mr. Poole in his recent excursion, in which he considers there to be a permanent supply of water. Traversed open stony plains of a barren nature, and crossed a fine creek at about 8 miles, the fall of the waters being to the eastward. Mr. Browne and Mr. Poole were both now tolerably well, but this season would try a

constitution of iron. The same burning weather continues, before which everything is giving way. Mr. Browne found a bottle of citric acid melted in his box, and his boots and shoes sticking together. The thermometer ranges from 90° in the morning to 108° at 3 P.M., and 97° at sunset.

11th.—Started at 4 A.M., and, pushing through the brush, debouched on open plains, generally covered with fragments of quartz; nevertheless they had more grass on them than those traversed yesterday. Keeping a little to the right, to avoid the gullies connected with some low ranges, reached the creek at noon, pitched the tents by a large water-hole, and found abundance of feed in and near the creek.

12th.—Wind N.W. The thermometer at noon stood at 108° in the shade. The mountain structure of the country has completely changed, the ranges are no longer continuous, but rise in unconnected groups, and they have also decreased in elevation; the rock formation is indurated sandstone, traversed by veins of quartz or shale, but, notwithstanding that, the hills are fast disappearing; the country is well watered, and the creeks are numerous.

14th.—Capt. Sturt, with Mr. Poole and Mr. Browne, Flood, Joseph, and Mack, left the camp at 1 P.M., following the general course of the creek. Mr. Poole and Mr. Browne had been down this creek, and had found more than 20 large water-holes in it. "We passed one at about 3 miles from the camp, and shortly afterwards a considerable creek junction from the westward. After passing this water-hole we looked in vain for another; the whole channel of the creek was as dry as if no water had been in it for months. I was not myself surprised at the rapid disappearance of the water, although my companions were, for I saw that it had been exposed to the double effects of evaporation under an almost vertical sun and absorption in a gravelly bed. They had not, like myself, seen rivers and lakes dry up before them, or they would not be surprised at what they now saw. Mr. Poole assured me that he and Mr. Browne crossed the creek junction higher to the westward, and that he felt confident there was a permanent supply of water in it."

15th.—Left the Red Hill Creek at 5 A.M. on a due N. course for a remoter creek, arrived there about noon, and found an abundant supply of water, the bed being of a stiff clay. The general course of this creek was E. and W. Traversed barren, stony, and treeless plains for 12 or 14 miles; on the right there was a low range consisting almost entirely of small peaks, to the left low hills connected with Red Hill (Mount Poole), and in front some undulating ground connected with the ranges towards which they were advancing. The precincts of this creek were bare of vege-

tation, and resembled the polygonum flats of the Darling. Lat. $29^{\circ} 14'$.

24th.—After exploring a considerable extent of country in various directions, Capt. Sturt returned to the camp, where everything was found to have gone on favourably during his absence, and where some degree of comfort was experienced after the exposure to a degree of heat perfectly astounding. On the 21st the weather was terrifically hot, the horses dripped with perspiration, the thermometer rising to 118° in the shade, but in the bush it had been at 132° in the shade and 155° in the sun. “It is now very evident that the ranges have altogether ceased to the N. and N.W., nor is it likely from appearances that they continue much further to the N.E. We have then the level and almost boundless interior before us, without a landmark of any kind to guide us, but for the present we are locked up as firmly as if girt round by ice at the north pole, it being impossible to move to any distance in consequence of the dry state of the country.”

27th.—“The creek crossed about 4 miles to the N. of our camp, was called by Mr. Poole the ‘Rocky Creek’ (Preservation Creek), and was found by him to contain an abundant supply of water in its bed; broke up the camp and advanced thither, fixing our position about a quarter of a mile from a romantic rocky glen of slate, in which there was an ample supply of water for 12 months to come. If unable to advance, we can here hold our ground, and occupy a most commanding position, so as to be ready to push into the interior at a moment’s notice.

29th.—Mr. Browne had a serious attack of illness, and for some hours this morning was in excruciating pain; he is much relieved, but remains weak and exhausted. Mr. Poole left for Mount Poole to take an altitude. The barometer ranges from $29^{\circ} 90'$ to $29^{\circ} 70'$. The thermometer 101° at 8 A.M., 108° at 3 P.M. The men generally complaining of rheumatism.”

Feb. 4th.—Being exceedingly anxious to get one of the natives to the camp, Capt. Sturt, with Mr. Browne and Flood, started, in the hope that he should fall in with a tribe seen by Flood at a creek about 20 miles distant. The wind blew from the N.E.; and the blasts coming with tremendous heat, were compared by Capt. Sturt to the scorching blaze of a kitchen fire, insomuch that he was absolutely compelled to turn from them. Any of the dogs would have died on the plain, but the horses stood it well. Crossing an extensive plain, they were beset by a number of large hawks, which came down from the sky in hundreds. One bird had previously soared round them as if to reconnoitre, and shortly afterwards numerous dark spots were seen in the air, which soon became literally speckled with the birds, crossing each other as they wheeled to and fro; some of them came so close that they

might have been struck down with a riding-whip: after a time they resumed their lofty flight. On arriving at the creek the natives had left.

10th.—Having been compelled to return from a proposed excursion by the illness of Mr. Poole, Capt. Sturt made further preparations for a second journey to the N., and left yesterday morning at daylight, accompanied by Mr. Stuart with Flood and Joseph, and with the light cart. Instead of passing by the little hill, a course more to the westward was chosen, by which an easy and gradual descent to the plains was obtained. A creek, previously supposed to flow to the eastward, was ascertained to fall to the westward. At 6½ p.m. halted for the night on a small flat.

11th.—Having filled the tank and casks, and loaded the cart, Capt. Sturt with Joseph (and Punch, with 60 gallons of water in the cart, which he calculated would last eight days, allowing the horse 5 gallons, and Joseph and himself 3 quarts per diem) started on foot. Flood was directed to return to the water at the clump of gum-trees, to await the return of Capt. Sturt and Joseph: Mr. Stuart remaining to sketch the hills. Lat. by Capella, 28° 58' 5".

12th.—Morning cool; but at noon the heat became excessive, and the horse showed great distress, refusing his food. "We are now, I believe," says Capt. Sturt, "in the most gloomy desert man ever trod; all the sand-ridges are covered with tussocks of spinifex, a thick wiry grass generally found near the sea-coast and only in the most barren situations. The character of the country continues the same, small flats surrounded by sandhills. The sandhills are covered with hakea bushes, all, or the majority of them, dead; and the only shelter was, under the cart. These deserts are as silent as the grave. No living creatures save ants are here, even the fly is absent: we have not seen a bird or heard an insect all day, yet the tracks of wild dogs are everywhere visible. How they subsist I am at a loss to imagine."

13th.—The horse showing great weakness, he was unharnessed, and Capt. Sturt mounted him, though without a saddle. The country bore the same aspect, though it became, if possible, even worse. At between 9 and 10 miles got on a small sandhill: from this there was not an elevation of any kind to be seen. The country to the N. and W. appeared to dip, yet a view of 8 or 10 miles was obtained; it was sufficient to depress the spirits of any one. They had now reached the parallel of 28°; long. 141° 22' or thereabouts. No distant peak revealed itself to the N., no reflected light showed that the sun had sunk behind a mass of waters; the horizon was as level as that of the sea, from N. round to N. again, and a deathlike sickly hue pervaded the scene. "In point of latitude we were nearly abreast of Moreton Bay,

and more than 200 miles to the westward of the Darling. When the moon rose we turned our back on this dreary wilderness, and reached the cart at midnight."

14th.—"Fifteen gallons of water still remained in the cart: it behoved us therefore to make the best of our way back: by giving the horse occasional rests and travelling by moonlight, we reached the water-hole where we had taken in our water at 3 P.M. on the 15th, through dreadful heat.

16th.—"Reached the gum-trees at 11 A.M., where we found Mr. Stuart and Flood anxiously awaiting us. Thermometer at 3 P.M. 110° ; wind S.E."

17th.—Leaving Joseph at the water-hole, Capt. Sturt, with Mr. Stuart and Flood, proceeded to trace down the creek. Its course was S.W. and W.S.W., sometimes spreading over flats, but always reforming and increasing in size. At about 12 miles fell on a creek junction (Frome Creek) of considerable size from the S. Halted at night, having travelled about 34 miles.

18th.—"Flood became unwell, and complained that his head was on fire; the heat was excessive. The horses hung down their heads and refused to move. The only object being to trace down the creek, as soon as Flood felt better we retraced our steps. From general appearances I felt assured that I was at no great distance from some decided change of country. Mount Hopeless must have borne S.S.W. of me; and, according to the chart, I must have been in the bed of Lake Torrens. Our camp is $29^{\circ} 40'$ S. lat., and in $141^{\circ} 34'$ E. long. I am extremely gratified at my journey down the creek. It will enable me to throw the party 80 or 90 miles in advance on the first fall of rain."

21st.—"Reached the camp late in the day. On the 19th, under the shade of a tree, 4 feet from the ground, the thermometer stood at 132° , and in the sun at 157° ."

24th.—"We have had no rain since the 20th of November, a period of three months, nor is there the slightest indication of a change; it therefore became a matter of grave importance whether or not a further reduction of rations would be advisable. On examining the stores it appeared that there was a sufficient supply of meat for thirty-two weeks, whereas the flour would last only twenty-nine. It was therefore determined to reduce the quantity of flour to 6 lbs. a-week each, and to make a corresponding reduction in the tea and sugar: these arrangements were cheerfully concurred in by all."

March 1st.—"Every bird and every animal has now forsaken these lonely and inhospitable regions. If any of the former appear, it is only for a moment, to rest their weary wing, and then pass on. Birds of prey, parrots, pigeons, have migrated to the

N.W.; whilst, on the other hand, pelicans, cormorants, and wild-fowl come in from that quarter; the first is a strong proof that there is a better country to which these birds go, the other is equally indicative of there being a desert or a sea between us and it. The service we are engaged on is not such as the exploration of Africa or America, but it is of a peculiar character, requiring the men to throw themselves into situations of great hazard and difficulty."

6th.—A flock of pelicans flew over this morning from the N.W.; Mr. Browne shot one, which had a small fish in it, but it was too much decomposed to determine what it was. Flood started down Evelyn's Creek to the eastward, to ascertain whether it continues beyond the flat on which it appeared to Mr. Poole to terminate.

7th.—Another tremendous day of heat, with an unusually heated appearance in the sky; wind S.E. Flood returned in the evening, having gone 30 miles down the creek, which he found took up again. At 25 miles he struck on a sheet of water in its bed more than a mile long; he saw smoke to the E.S.E., but met with no natives. He found great quantities of the kidney-bean growing on the banks of the creek, on the seeds of which a number of cockatoos were feeding.

9th.—"This day completes the seventh month of our peregrinations, yet here we are, bound hand and foot, as it were, without the power of moving, captives in a large and gloomy prison. Mr. Poole is again very unwell."

10th.—"The morning hot and oppressive, but at 4 P.M. a partial thunder-storm from the N.W., the wind having previously been at E. A little rain fell, but the barometer did not move."

12th.—Capt. Sturt left the camp with Mr. Browne, Flood, Joseph, and Mack, taking the light cart. Proceeded to an old encampment on the banks of Evelyn Creek, it being an object to follow it down as far as possible. A good deal of rain had fallen near it, and there were many ponds on the plains; crossed the extensive flat in which Mr. Poole thought the creek terminated. Encamped for the night, having ridden about 33 miles in a S.E. direction. A meridian altitude of Pollux gave the position $29^{\circ} 56'$.

13th.—Crossed the creek, and took up a course of about 80° , the trend of the creek being 76° . Traversed sandy flooded ground, covered profusely with various grasses, especially rice-grass. Here had been the harvest-field of the natives, their thrashing-floors and heaps of straw chequering the plain. "From the ridge we discovered that the plain extended an immense distance to the S. and S.W., with scarcely a tree upon it, but intersected by small channels which, lined with polygonum, divided

it into spaces resembling fields. We discovered a fine sheet of water, on which were a number of ducks; Mr. Browne went to shoot some, but, as they were wild, he followed them to the other end, and there surprised a native female with a child. She was apparently by herself, but there were two bough-huts near where she was sitting, and the men evidently were hunting. It was not until after we had settled ourselves at the water with the view of waiting for the men, and had allayed the old lady's fears by giving her three or four cockatoos, that she mustered courage to call out, on which three more damsels made their appearance, who had concealed themselves in the polygonum. In the afternoon two men came in, the one had killed nothing, the other had a talpero and a lizard. Although they spoke and understood several words of the Darling language, we could make nothing out of these stupid people. We gave one a tomahawk, and the other a blanket; and at sunset they obligingly sent their women to us, of whom we got rid with some difficulty. The men were both circumcised."

14th.—"The channel of the creek flows round the spur which runs into the flat from the main ridge, and then again spreads over a more extensive plain than the first, extending many miles to the S., and forming an immense bay to the westward. We now struck down the plain. At 6 miles we came to another spur from the ridge, but from it we could see no opening leading out of the extensive basin before us, save to the E.S.E.; we therefore took that route, following it for 3 miles, when we descended into the bed of a large lake now perfectly dry. Traversing this, we again ascended a portion of the ridge, but here we lost sight of all gum-trees, and flooded land and scrub alone presented itself from N. to S. No object being to be gained by advancing, we turned about, and at sunset reached the water we had left in the morning. The natives, probably anticipating our return, had removed to the other side of the water, and had been joined by another family. They told us they had come from the S. in consequence of the total failure of water in that quarter; and they said that there was no water to the eastward. When we informed them that we were going there, they shook their heads, and said we should soon return. We gave the oldest a knife and some ducks, in consequence, probably, of which our camp was at dusk again visited by their sable charmers, who manifested the utmost indignation at our rejection of their favours; one of them openly evincing her contempt of Mr. Browne, by slapping at him the last part of her that disappeared as she left us."

16th.—"Having taken a supply of 46 gallons of water from the creek, we first pursued a course a little to the northward of E., afterwards E. During this day and the following we continued

our exploration; but finding the country impracticable, and that there was no chance, even if a change of country existed, of reaching the Darling, we determined on returning to the creek. At sunset on the 17th we turned our horses' heads to the westward: boiling-point 212° .

20th.—Reached the camp early, and turned our horses out to join their companions. The result of this little excursion, not exceeding 80 miles to the eastward and 25 or 30 to the S., has been the discovery of other permanent water than that on which we are; the knowledge that a fair tract of good land lies to the S.E. of us, and that the distant country towards the Darling is barren and waterless to a certain distance.

24th.—Engaged in taking lunars: the mean places us in long. $141^{\circ} 30' E.$, lat. $29^{\circ} 40' S.$

27th.—The men engaged in preparing various things we are likely to require. Symptoms of scurvy are manifesting themselves. Capt. Sturt complained of head-ache, and his mouth became as if he were in a state of salivation, small pimples appearing on the shoulders and back.

31st.—The month of March has closed in heat and drought, nor is there any appearance of a change of weather."

[The journal here closes, and the remaining portion of this extraordinary and most interesting narrative is extracted from various letters and dispatches of Capt. Sturt.—ED.]

"More than six months have now passed since we pitched our tents in these dreary solitudes, nor have we had a shower of rain since the 19th of November, this being the 2nd of July. The sky is at length overcast, and there is every indication of rain. In consequence of myself and my officers being so constantly employed on detached services, we were obliged to live much on salt meat, and in February the scurvy showed itself upon us all. We were attacked with swollen and ulcerated gums, violent headaches, pains in the limbs, &c. In my own case, the limbs were free from pain, but I had constant, though not profuse, bleeding from the nose. These symptoms did not increase with Mr. Browne or myself, but Mr. Poole became worse and worse: ultimately the skin over the principal muscles became black, and he lost the use of his lower extremities. Although the more violent symptoms have subsided, he is still very unwell."

July 8th.—Sufficient rain having at length fallen to enable Capt. Sturt to break up the dépôt, he proceeded on to the N.W., detaching Mr. Poole, with a third of the men under his charge, to return to Adelaide, both for the purpose of diminishing the consumption of the remaining stock, as well as to request that an additional supply should be forwarded from Adelaide to meet the expedition on the Darling at the end of December. Mr. Poole,

though still unwell, had recovered so far as to render it probable that a few weeks of rest and a change of diet would restore him.

On the 13th, Mr. Poole set off on his return to Adelaide, in one of the drays which had been fitted up for his convenience, accompanied by Mr. Browne during the first day, who returned to the camp on the morning of the 14th; in the afternoon the lad who attended Mr. Poole brought the sad intelligence that he had suddenly expired, almost without a struggle, between 2 and 3 P.M. Captain Sturt and Mr. Browne rode back to the party the following morning, and brought the remains of the deceased to the dépôt, where they were interred. Mr. Poole's death was supposed by Mr. Browne to have been caused by sudden internal hæmorrhage. The command of the returning party was now given to Mr. Piesse, with directions that should any of the men misconduct themselves they were immediately to be struck off the pay-list.

"We have now experienced a difference between the extreme of summer heat and of winter's cold of 133° ; the thermometer having in February risen to 157° , and within the last few days fallen to 24° .

"The direction in which it would be most desirable to penetrate, when circumstances should favour my moving, had constantly occupied my thoughts, and I felt I could not take a more direct course, with a view to gaining the meridian of Mount Arden, than by attempting to cross the country to the westward, in order to ascertain the practicability of it to the N. and N.W. of Lake Torrens. I determined therefore on proceeding towards Lake Torrens, from the creek on which I intended to establish my second dépôt. In moving to that point in a direct line, we found great difficulty in getting the drays over the sand ridges which intersected our course for more than 60 miles. Our second dépôt was established in lat. $29^{\circ} 6' S.$, and in long. $141^{\circ} 5' E.$ I had employed the men in chaining from our first dépôt towards the creek to which I intended to move; and by supplying them with water, I had enabled them to complete a measurement of 62 miles, on a bearing of 305° ; but as that course would have taken me too far to the N. of Lake Torrens, if continued, I directed Mr. Stuart to change it on our arrival at the end of 62 miles, and to continue the chaining to the westward on a bearing of 255° , until I should overtake him after I had established the camp in its new position. Two days after overtaking Mr. Stuart we were stopped by the broad, dry, and sandy bed of an extensive lake, the men having then chained $69\frac{1}{2}$ miles on the new bearing of 255° . Standing on a high bank, which sloped gradually down to the margin of the lake, our view extended over a great part of it. It here appeared about 12

miles in breadth, extending southwards beyond the range of vision; but it came round to the westward, in a northerly direction, in the shape in which Mr. Eyre has laid down Lake Torrens. According to our measurement from the old depôt, we were now in long. $139^{\circ} 38'$, lat. $29^{\circ} 15'$, as given by my altitudes of Vega and Altair, on the night of August 5th. From the termination of our chained line, the principal point of a high and broken chain of mountains bore 198° , and a small flat-topped range was visible more to the N., bearing 231° ; the former distant 65, the latter 30 miles. Beyond, to the S.W., the country seemed to be wooded, but, if I except the ranges I have already noticed, no high land was visible in any other direction. On descending into the basin, I found that it was composed of sand and salt, with patches of clay and gypsum, and although apparently dry, that its surface was too soft to bear my weight. It contained detached sheets of dark-blue salt water fringed round with samphire bushes; I felt satisfied that this basin could not be connected with any more central body of water. It only remained to me, therefore, to return to the depôt with all speed, there to prepare for a more extended exploration of the N.W. interior. We fell in with several tribes of natives, who were evidently availing themselves of the recent rains to wander over the sandy ridges. Returning to the depôt, it was my first care to take the necessary measures for its safety during my absence. I had a stock-yard erected, in which I gave orders that the cattle were to be nightly confined and mustered; and I marked out the ground for a stockade, to guard against any sudden or hostile display on the part of the natives. Having given instructions to Mr. Stuart, to whom I proposed intrusting the charge of the camp, and the preparations for our journey being completed, I left the depôt on the 14th of August, accompanied by Mr. Browne and three of the men; taking with me the light cart and two packhorses, with fifteen weeks' provisions. I determined to run on a course 25° to the W. of N., and to persevere in that course until turned from it by some unforeseen impediment. The two days' rain had been succeeded by extreme heat, and little or no surface water now remained; such as there was being so putrid from the number of animalcules in it, or so muddy, as to be unfit for use. In a distance of 86 miles we crossed only two small puddles, the residue of the water in which I collected into wells, to facilitate in some measure our retreat, in the event of being forced back. For the first 70 miles we passed through a country similar to that we had lately traversed; it then became more open, but so dry that I began to doubt the possibility of getting on. At the distance of 86 miles, our anxiety was relieved by our arrival on the banks of a large creek (Strzelecki Creek). It

contained a pool of water of two or three hundred yards in length, and of nearly half that width; its banks were wooded and grassy, and several large huts near it had recently been occupied: the dip of the country was still to the S. Crossing the creek, on the morning of the 19th, we traversed extensive plains bounded by low sandhills; the soil on them was similar to that on the flats of the Darling. It was now our good fortune to intersect three other creeks at distances of 15 or 18 miles apart, all of which indicated a southerly drainage. On the last of these (O'Halloran Creek), in lat. $27^{\circ} 30'$, and in long. $139^{\circ} 32'$, we encamped on a clear but brackish pool, in which were many fish, although there were none in the fresh-water pools above. The extensive and flooded plains ceased soon after we left the last of these creeks, and we ascended a confused mass of sandhills, from which we again descended to a tract of salsolaceous formation, in the centre of which was the white and dry bed of a salt lagoon; after passing through a low and barren scrub, at about 8 miles we found ourselves on the outskirts of extensive grassy plains, similar to that on which I had established the *dépôt*. Traversing these plains we passed into an open box-tree forest; we soon, however, broke through this, and were again opposed by a wall of sand; high and broken ridges rose before us of a more formidable aspect than any before encountered, and of a fiery red colour, rising to the height of 80 or 100 feet; they succeeded each other with the rapidity of sea-waves. The bare sand lay on the summits like drifts of snow, but they were otherwise covered with *spinifex*. This heavy and distressing kind of country continued for more than 16 miles, and we were ultimately obliged to pull up for the night without either water or grass; the horses were worn out, nor would they have undergone a second day of similar fatigue; happily, on the following morning we reached a small stony valley, in which we found both. This valley opened upon an immense plain, in which the sandy ridges abruptly terminated; the plain spread out before us like a gloomy sea, occupying more than half the horizon from south-westward round to the N.E. It was so thickly covered with stones as wholly to exclude the growth of vegetation; the stones, composed of fragments of quartz rounded by attrition, lay evenly over the surface, and being thickly coated with oxide of iron, gave a reddish-brown and purple tinge to the whole plain. Our horses left no track behind them, nor was there an object on the visible horizon to direct us in our course; like a ship at sea, we were obliged to steer by compass, and to depend on our own correctness for the chance of retracing our steps. We halted on this plain after a journey of 20 miles, and on the morning of the 28th pushed on, and at 10 miles, after a visible descent of a few

feet only, crossed a polygonum flat of 2 miles in breadth, which ran like a belt along the edge of the stony desert: from this flat we advanced on to plains, apparently of as unbounded extent, but very different in other respects from the adamantine region just passed. This new feature resembled ploughed land, the whole was perfectly destitute of vegetation; a sea of earth, on the surface of which not a herb of any kind was growing, or a single stone to be seen. After wandering many miles over this singular region, with the horizon as clear and level as that of the ocean, we at length observed a solitary clump of trees in the distance, and directly in our course; at the same time some moderately elevated hills, raised above their true position by the strong refraction on the plain, became visible to the N. On reaching the trees we found they were growing on the bank of a small channel, and in this channel was a pool of muddy water; having travelled 30 miles over a very distressing ground, I halted for the night. We were obliged to secure the poor horses to the trees to prevent their straying for food, not a mouthful of which was to be seen. Anxious to relieve the poor animals as soon as possible, I made direct for the hills, and, after travelling from the earliest dawn, reached them a little before noon. These hills were nothing more than a recurrence of the sandy ridges; they appeared to recommence on this as they had terminated on the other side of the stony desert, leaving a broad opening of more than 50 miles between them, running northwards into the interior, without varying a single degree in their general direction: thus apparently traversing the continent from S. to N., as we had already found them for more than 5 degrees. Viewing the features of the country before me, and connecting them with the general character of the interior, I could not but think that the whole of that part of it over which we had passed, had, at one time, been covered by the waters of the ocean, from the level of which, although so far inland, we have never risen more than a few feet; and that by whatever convulsion the present change had been effected, a heavy flood must at one time have swept across the central portions of the continent from N.E. to S.W.

"From the point I had now gained I was enabled to resume my original course: after allowing the horses a few hours of rest we proceeded; at 7 miles we entered an open box-tree forest, and about sunset arrived on the banks of a large creek, which was, however, quite dry; in tracing it, we discovered a well of unusual dimensions, 22 feet deep and 8 broad. As night was fast closing, and there was abundance of grass in the bed of the creek, although the supply of water in the well was quite inadequate to our wants, we pulled up opposite to a village of nineteen huts, some of which were of large dimensions. But if the lords of the soil had retired,

from this spot, the birds of the forest resorted to it in great numbers, the woods re-echoed with the cry of parrots and cockatoos, and the trees were crowded with them and other birds. Leaving this spot, at a distance of 2 miles, we issued from the wood upon the outskirts of a plain, the surface of which was so rent and cracked by solar heat, and so full of deep fissures, that we crossed it with difficulty. At 7 miles we struck another but smaller creek, in which we found a muddy and shallow pool; as the horses required rest, I determined on stopping; it, indeed, was necessary, as several of them became very ill and swelled exceedingly. A day of rest brought them round, with the exception of one, which we unfortunately lost. We now found that the further we pushed to the N.W. the worse and more impracticable the country became. We had already been two days without water; I determined, therefore, to proceed a few miles to the N. The temperature had been gradually increasing, and was now such as to cause extreme lassitude both to ourselves and to the horses; they were beginning to feel the want of water, but we providentially found a small pond, in the bottom of which a few gallons remained—muddy indeed, and putrid, but which we could not reject. At 50 miles we found ourselves on the banks of a creek, of greater magnitude and promise than we could have anticipated (*Eyre Creek*), coming direct from the N.N.W.; it enabled me to resume my original course under the happiest auspices. We traced this fine creek for 60 miles without any check; but, although its bed was full of grass, the flat through which it ran was barren in the extreme, and was bounded by sandy ridges of increasing height, behind which other ridges succeeded in such numbers as to render any attempt to penetrate directly either to the eastward or to the westward perfectly hopeless.

“On the 9th of September we were in lat. $25^{\circ} 4' S.$, and in long. $138^{\circ} 15' 31'' E.$, on the last fresh-water pond at the head of the creek, up which we had made such advances during the last three or four days, a point to which I had returned after having failed in an attempt to push to the northward. In pondering over our circumstances I could not hide from myself the danger to which I was exposing myself of being cut off from all chance of retreat to the depôt by the evaporation of the water we had passed. The sky was occasionally cloudy, but no rain had fallen since the 17th of July, whilst the increasing noonday heat was fast licking up the water that remained in the creeks. I made my camp the centre or pivot of my movements, and diverged from it to every point of the compass. To the W., to the N.W., to the N., to the N.E., and to the E., the country was alike impracticable. The 13th found us still struggling against diffi-

culties, such as were not to be overcome by human perseverance. The floodgates of heaven appeared to have been closed for ever from that devoted land, so determined and settled was the drought by which it was visited.

"The increasing indisposition of Mr. Brown, and the impossibility of my leaving him under such circumstances, determined me to make the best of my way back to the *dépôt*, thence again to try and beat my way in some other direction. We were now more than 400 miles from the camp, and I hoped that ere we could reach it rain might fall, and enable me to commence my third journey under more favourable auspices. Our retreat was one of extreme difficulty; we reached our destination on the 3rd of October, with the loss of only one horse, after a journey of more than 900 miles, and an absence of seven weeks. I had been attended by a man who had long been inured to the bush in New South Wales, and who was deemed the hardiest and most experienced stockman in the colony; by a lad of twenty-one, whose appearance was sufficient to justify the expectation that he would endure almost any fatigue; and by a weather-beaten sailor: but I may adduce this as an instance of the great superiority of moral over physical strength, that neither of these could accompany me when, in 6 days after my return, I again left the camp; and, on this last journey, as on former occasions, I was obliged to select fresh men to accompany me.

"Every necessary arrangement having been made, I left the *dépôt* on the 9th of October, attended by Mr. Stuart and two of the men who had not been out before. There being no water nearer to us than 86 miles, it became necessary to make for that point (Strzelecki Creek) before I could take up the northerly course on which I intended to run into the interior. We reached the creek on the 11th, and I was glad to find that, although it was greatly diminished, there was still a large body of water in the pool it contained. As the creek came from the N. we traced it up in that direction for some miles, on the morning of the 12th, but, ultimately losing its channel in a large box-tree flat, we left it, and traversed extensive plains bounded by low sandhills. After a journey of 36 miles I was obliged to pull up for the night, although without water. In the morning we perceived from the top of a little hill a broad belt of gum-trees, extending from the eastward to N.W., with extensive plains on either side of it. To the N.E. a lofty and broken range of hills was visible, but at a great distance, and there was an appearance of water or mirage at their base. At 4 miles from the hill we found ourselves on the bank of a splendid creek (Cooper Creek), far exceeding in size any we had previously seen in the interior. We struck the head of a broad serpentine sheet of water, covered with a new species

of duck. Flooded or white gum-trees, of large dimensions, grew on its banks; beyond which, on either side, there was a belt of open and grassy forest-land. Descending to the trees, we were at once stopped by a second creek, larger than the first, the main channel, of which the first was only a branch. The grass in the channel in which we now were was so beautifully green and luxuriant that I determined on remaining stationary for the day, to give the horses the benefit of it, and the rest they so much required after the long and fatiguing journey they had made from the dépôt. The creek at which I was thus momentarily established was 240 yards broad and 26 feet deep, opposite to our camp. It had long serpentine sheets of water both above and below us, and a considerable breadth of open and grassy forest-land on either side. Well beaten paths, leading from one angle of this creek to the other, led me to infer that I should find a numerous population upon its banks. Yet, with the most favourable appearances, this watercourse, like the Murray River, was in the centre of a desert; for the extensive plains which flanked the belt of forest-land on either side of it were sterile, and in many places herbless, and the whole region was a mass of sand.

“Leaving the examination of the creek and ranges to the period of my return from the interior, I resumed my journey on the 14th, and crossing the creek, which trended to the N.W., I proceeded northwards, over grassy plains, somewhat elevated above the earthy and flooded flats we had recently traversed. At 8 miles we descended to some plains of salsolaceous character, but in the afternoon again ascended to grassy plains, similar to those crossed during the early part of the day, and, at 36 miles, halted near a small puddle left by a recent thunder-storm. Feeling that it was necessary to use every precaution in advancing into so treacherous a region, we here dug our first well, in which we collected all the water we could. On the 15th we travelled for a few miles over the same character of country, but about noon we had the mortification to see once more the sandy ridges rising before us, nor was it long ere we had them on either hand as formidable and barren as ever. They still continued to preserve their former bearing, running up N. in parallel lines at an angle of 20° to the W. of that point. The flats between were either covered with salsolaceous plants or comprised the dry beds of salt lagoons. Nothing could exceed the sterile and inhospitable character the country assumed, or the hopelessness of the prospect before us. At sunset we halted at another puddle, but the horses had scarcely a blade of grass, yet they did not dare to forsake the shallow and muddy puddle. The moon being full, we were enabled by its light to dig our second well, in the event of water failing us in our retreat. We continued our journey,

riding at one time across the white and dry beds of salt lagoons, at others running along the tops of sandy ridges. At 3 P.M. we had a large body of water in front of us, which proved to be a lake (Lipson Lake), 12 miles in circumference; this lake was extremely shallow, and the water in it was perfectly putrid, so that it was wholly unfit for use either for ourselves or the animals. Barren and inhospitable as this region appeared, it was nevertheless inhabited by a more dense population than any other part of the interior we had visited. Riding round the shores of the lake, we passed several villages, consisting of from twelve to twenty huts. We did not, however, see any of the natives; neither were there signs of their having recently visited the neighbourhood. It is evident, from the villages being built on the side of the lake, that its waters must at some seasons be fit for use. They were now partly fresh and partly salt, but both smelt and tasted so bad that it was impossible to drink them; nor could we obtain any other than salt water from the wells we dug round about. One of the results of this second expedition was to prove the fact that all the creeks which Mr. Browne and I had crossed in our first journey were branches of the main creek I had last discovered, and that during periods of floods the intermediate plains were under water: thus proving that the drainage was, as I imagined, from E. or W.

"On leaving the lake I turned a little to the W. of N., to avoid the low and gloomy desert which extended northwards, and at 9 miles stopped at a shallow puddle, the only one we had seen during the day, in which there was just sufficient water for our present use. We were now at a distance of 100 miles from the creek, and although I had taken the precaution of digging wells, I could not reasonably or prudently hope that the sandy soil would retain the water for many days; it became therefore necessary to find some supply of water on which I could rely before I ventured to increase my distance from our known place of refuge. After long and anxious search, we found a small but deep gutter, almost hid from our view by long grass, in which there was a small quantity of water. Calculating that this supply would not fail for some days, I proceeded onwards, and rose at once from the beautiful and grassy plains I had just been traversing to the dreary and spine-covered ridges by which they were bounded to the N.W., and which never ceased until we again found ourselves on the outskirts of the great stony desert. The appearance of this desert was unchanged. The stones that covered it were similar in shape and colour: bare of vegetation, it was not without a feeling of dread that I descended the ridges to commence my journey over it. Crossing its trackless surface in a N.N.W. direction, we reached a low sandhill at about 14 miles, and, keeping along its base to

avoid the stones, our horses being unshod, halted soon after at a small puddle; though the water it contained was inadequate to our wants, our poor animals being fairly worn out with heat and pain. On the following day we pursued our journey, traversing plains and sandy ridges, and at 7 P.M., at 29 miles, having failed in our search for water, we pulled up on a small patch of grass. On the morning of the 25th of October we proceeded down the little valley in which we had slept, towards a line of hills that appeared to be about 12 miles distant, and on turning suddenly to the N. we found that the valley opened out upon the stony desert, which now extended before us to the base of the hills for which I was making. These hills proved to be only sandy ridges of more than usual height, covered over with stones similar to those of the desert itself, in addition, however, to which, sharp-pointed fragments of indurated quartz appeared to have been driven into the sides of the ridges by the force of water. The whole desert, indeed, for some miles, presented the appearance of a vast sea-beach, on which a storm had cast up every-sized rock, and half buried them in the strand. From the top of the highest of these ridges, the eye wandered over a dark expanse of stone: all round the visible horizon the line of the desert was unbroken—if I except at one point to the S.E., where the sandhills we last had crossed rose above it. To the N., to the N.W., and to the N.E., the view extended to a greater distance than was attainable by us in a day, but nowhere could we see a ray of hope. We were now nearly 40 miles from the nearest known water, and the horses had already been without for more than six and thirty hours, and were so weak and leg-weary that I doubted, when the matter was forced on my attention, whether they had strength to return to it, in the event of my determining to do so from this point. I was in a situation in which a false step would have cost us our lives; for the loss of our animals, which would have been the necessary consequence if I had pushed on and failed in obtaining water, would have inevitably sealed our fate. I felt conscious I had done all a man could do. For 10 long weeks I had slept under the canopy of heaven, and had never been sheltered during that time either from the scorching rays of the sun or the still more distressing glare of the moon. Of all who were with me, I alone had been able to hold up against hunger and thirst: I had left those who accompanied me on my former journeys sick and disabled at the *dépôt*: I had avoided no labour, shrunk from no danger; I yet could not bring myself to retreat, but, for some wise purpose of His own, it had not pleased Providence to prosper me on this as on former occasions, and in yielding at length to the force of circumstances, I did so under the influence of a Power I could not resist,—a Power that extended His hand to save me from that destruction in which my

own impulses would otherwise have involved me. I ultimately decided on retreating to the nearest water in our rear, having gained lat. $25^{\circ} 58'$ and long. $139^{\circ} 26'$, and we accordingly turned back at noon, having advanced about 12 miles from the valley in which we had slept, and which we again entered about 4 P.M., when I gave the horses an hour's rest, but, instead of eating, they crowded around me, as the only one who had been with them and relieved their former wants for water. At 5 P.M. we resumed our journey and travelled until midnight; but before then one of my horses dropped dead, and I was obliged to abandon him; the others could hardly drag their limbs along, and thus compelled me to halt until the dawn of day, when I again pushed on, and going with Mr. Stuart in advance of the men with the pack-horses, reached the point at which I expected to find water, but none any longer remained; the channel that contained it was dry.

"When the men came up, they reported that another horse had dropped, but that he was at no great distance, and might yet be saved if we could find water. We commenced a search along the line of a little channel formed by a partial and local drainage. Our search would have been unsuccessful if we had not been attracted by a solitary pigeon (the only living thing we had seen for some days in that dreary wild), which, topping the sandhills behind us, pitched for a moment in the grass at a short distance, and then flew away. On walking to the spot, we found a clear but small pool of water, small indeed! but it contained sufficient to relieve us in our distress; and none but those who have been similarly circumstanced can estimate the feelings of gratitude by which we were overcome. Not only was the horse that had been left behind saved by this timely assistance, but all the animals, as well as ourselves, were proportionably strengthened for the trying journey still before us. At this point we were in lat. $26^{\circ} 27'$, long. $139^{\circ} 38'$, and about 137 miles from the great creek, between which and the stony desert we had sunk 4 wells, the first and largest being about 22 miles from us; in that I had no doubt we should still find water, but, with the exception of the little channel on the grassy plain, I had no hope of finding water in any other place between it and the creek, a distance of nearly 100 miles. Considering the weak state of the horses, I deemed it absolutely necessary to give them a day's rest. On the morning of the 26th we crossed the last portion of the desert, and late in the afternoon reached our first well, in which there was still some water remaining; the following morning, however, it was unfit for use, so that we *could* not, and our horses *would* not, partake of it. On arriving at the water-hole in the grassy plain, we found just sufficient water to supply our wants, insomuch that we drained

the last drop from it before we left : had we been a day later, most assuredly we should all have perished.

“ We had now a distance of 88 miles to travel, nor did I encourage a hope that we should obtain water until we reached the creek. We left the grassy plains at 6 A.M., and, passing the salt lakes, continued to travel till 6 P.M., halting for one hour at noon. We had now arrived at our second well, but it had been dry for some days. At 9 P.M. we resumed our journey, travelling all night, and retracing our steps by the light of a lamp, the safety of our horses depending on our pushing forward as rapidly as possible. At 5 A.M. of the 27th we gained the first well we had dug, and, to our infinite joy and surprise, found a few buckets of water in it, which, if not sufficient for our wants, were enough to slake the thirst of the animals, and ensure their being able to perform the remaining 36 miles. At 8 A.M. we resumed our journey, and, under the Divine favour, gained the creek at 9 A.M. of the 28th with five of the horses, two having dropped just as we came in sight of it. All of them were reduced to great weakness, and they had worn their hoofs down to the quick. Arrived at a place of safety, we had no difficulty in saving the dropped horses, and I felt that a day or two of rest would in some measure restore them.

“ On reflecting over the circumstances in which we were placed, and the work I had yet to perform in the examination of the country and creek to the eastward ; considering (the thunderstorm of the 14th excepted) that not a drop of rain had fallen for nearly four months, but that the earth had been subjected to a degree of heat enough to reduce all it produced to powder, and under the effects of which it was impossible to calculate on the deepest pools long retaining any water, I felt I had no time to lose, if I hoped yet to secure my retreat to the depôt, with one place only in the whole distance—118 miles—in which we should find water ; I was therefore unable to allow the horses more than one day's rest. On the 29th, in the afternoon, I proceeded a few miles up the creek, and encamped close to a beautiful sheet of water, with abundance of grass for the animals. On the 2nd of November we had traced the creek upwards more than 65 miles. The higher we ascended the more did the signs of a numerous population increase. Now, however, the large gum-trees which formerly adorned its bank ceased, and a fine species of *Melaleuca* succeeded. The channel lost the grassy intervals in its bed, and resembled an arm of the sea. There was also a peculiar shade in the water, a large sheet of which we were approaching, that raised my suspicions, and on tasting I found it to be brackish. A belt of weeds ran round this water at some little distance from its margin, and between this belt and the brink of the water we observed thousands of small

fish. It is remarkable that we had not seen any fish in any other of the pools, but only in this brackish one, and it immediately struck me as corroborative of the westerly drainage of the interior, since I could no longer doubt that the creeks we had crossed on our first journey were branches of this main one, down which the fish must be taken in seasons of flood.

"On the morning of the 3rd we arrived at a pool, the water of which was of so deep a blue that I at once concluded it was salt, and so we found it—so salt, indeed, that no animal could live in it; yet the very next pool above this was perfectly fresh. From this point the creek gradually fell off; a line of stony elevations bounded it to the N., and some stony plains extended southwards; at about 7 miles the hills receded, and a large grassy plain ran up to the N.E., in which the creek split into numerous narrow channels. There were now some low rocky hills distant about a mile from the creek; from these the view to the E.N.E. and N. was over an unbroken grassy plain (Macleay Plains); to the S. this immense plain was bounded by low dark hills; but to the N.E. and E. the plain bounded the horizon, and we must have gazed upon hundreds of thousands of acres of cleared and grassy land. On descending from the hill I made for a thick clump of gum-trees, under which I expected to find water, and, on nearing them, observed a party of natives approaching us. I dismounted and, with Mr. Stuart, went to meet them. I learned from these people that there was no water to the eastward, but that they had their camp close to a large pool, under the trees to which I was going. One of these men, of whom there were sixteen, was full six feet three inches in height, and all were fine men. I made the chief some presents, and they very kindly showed us the way over the creek. In the distance of 8 miles we communicated with five tribes. I felt assured, from my knowledge of the habits of these people, that we had not yet seen the principal tribe of the creek; and, on ascending a sandhill, I found that I had not been wrong in my anticipations. Our appearance on the top of it was greeted by an almost deafening shout from about 400 natives, who were assembled below. On our riding down, all clamour ceased, on which I dismounted and walked to them, attended by Mr. Stuart. No people could have received strangers with more kindness than did these receive us: the fact is, we had so completely overrun the interior, that our presence was known far and wide. We had, in our excursions, fallen in with many straggling parties of natives, and had had frequent opportunities of relieving them when pressed by thirst, and had ever treated them with kindness. There was an open frank manner about them I had never before noticed in my intercourse with the aborigines. They were also the finest race of men I had seen on

the continent, several of them standing more than six feet high; and, of sixty-nine who had gathered round me, none were under five feet eleven inches. They confirmed the information of there being no water in any direction beyond them; and they gave me to understand that all the water was gone to where we had come from; and intimated by signs that the creek rose in the immense grassy plain. I found it therefore necessary to turn back at this point—lat. $27^{\circ} 46'$, long. $141^{\circ} 54'$. On the 9th of November we reached the place from which we had started on the 28th ultimo, but I could not give the animals any respite or rest; it remained to be seen whether I had already delayed too long to have a retreat still open to me. We were now 130 miles from the depôt; the nearest and only water between us and the camp was in the large pool of the first creek—if indeed any still remained in it—and on this question depended our safety.

“My horses were now so weak that I was obliged to abandon all my heavy luggage, stores, and flour; and I left that creek which I had been tracing with such anxious expectations of success, doubtful whether I should reach, if I may so call it, ‘my desert home.’”

“For some time I had felt my strength failing me from both paucity and poverty of food, from continued exposure to intense heat, from ceaseless fatigue, and from anxiety of mind; but I attributed my debility to these causes, and not to any latent malady. We continued our retreat on the 9th, and reached the first creek (Strzelecki Creek), 86 miles from the depôt, late in the afternoon, having timed our retreat to it too closely. There was only just water enough remaining to relieve the thirst of the horses on their arrival, in that pool in which, not seven weeks before, we had seen the wild-fowls sitting, regardless of our approach. We were obliged to make a small trench to drain during the night what was left, but it was rather mud than water, and quite insufficient. About 9 A.M. of the 10th, so terrific a hot wind came on, that I really apprehended fatal consequences to our animals. At noon, our now only remaining thermometer stood at 125° , and on my placing it in a fork of a tree, protected alike from sun and wind, it soon rose to 127° , the height to which the instrument was graduated, and ultimately the bulb burst from the expansion of the mercury. In consequence of the exhausted state of several of the horses, I found it impossible to proceed until 5 A.M. of the 12th, when we started for the depôt, after draining up every possible drop of water, retaining one gallon to give to any horse that might fail. At 2 P.M., and again at 8, I halted for an hour; a little before midnight my favourite horse dropped, but on relieving him of his load, which I abandoned, and giving him some water, he revived, but again fell at 3 o'clock

with another of the horses. It then appeared to me that my best plan would be to push on with Mr. Stuart, and send a dray from the camp with water for the relief of the men, whom I directed to move quietly on. We reached the stockade (Fort Grey) at 11 A.M. of the 14th, but found it deserted; the party had fallen back on the old dépôt, in consequence of the putridity of the water. The men came up at midnight with the loss of the horses which had given in before I left them. Here we were compelled to remain four days before the animals could move. I then again preceded the men with Mr. Stuart, having 72 miles to ride, promising to send a dray with water the moment I reached the camp. I rode this distance in excessive pain, and after having been on horseback $18\frac{1}{2}$ hours, dismounted, feeling very unwell. On the following morning I was confined to my mattress unable to move. My muscles had contracted and become as rigid as boards, my limbs refused their office, and I was laid prostrate. We returned from this journey with the loss of three horses only, after an absence of five weeks, during which we had ridden more than 800 miles.

"Although I had thus providentially reached the dépôt in safety, it was nevertheless a matter of doubt whether the door was still open for our return to the Darling. The country was in so fearful a state from the continuance of the drought, that the ordinary course of nature appeared arrested. For a period exceeding a twelvemonth, only two days' rain had occurred (excepting the thunderstorm), whilst, on the other hand, the heat had been excessive, greater, perhaps, than any traveller was ever exposed to before. The air occasionally became so rarified, that we had a difficulty in breathing, and were obliged to turn our faces from the scorching blasts that crossed the burning region in which we were, on the almost molten surface of which, any matches accidentally dropped immediately ignited. There was a distance between us and the Darling of 270 miles. On our way up the country we had stopped at a creek (Flood Creek), in which there was a tolerable supply of water, but from it we were distant 118 miles: between us and that creek there was a smaller one (Burr Creek), at 40 miles, in which I hoped there might still be water. To that creek I sent Flood two days after my return, but he brought back nothing but disappointment; it had long been dry.

"We were now aware that there was no water nearer to us than 118 miles; and even there it was extremely doubtful whether any remained. Unable myself to move, at a moment when my exertions and my example were equally necessary, doubtful whether we should not have to pass another summer in this gloomy region, it was under such circumstances that Mr. Browne, who attended me as medical officer, and whose attention and zeal deserve my

warmest commendations, volunteered to proceed to the creek, on which our hopes were now centred, to ascertain if water still remained in it. To consent to his leaving me to run such a risk was out of the question, unless I could by some expedient or other supply him with water sufficient to ensure his probable safety. In this extremity, I directed one of the bullocks to be shot, and filling the hide with water, sent it on a dray to the distance of 30 miles on our homeward road. I then arranged with Mr Browne that he should take the light cart with one horse, and 36 gallons of water, a day's journey beyond where the dray might stop, and then, quitting the cart, ride to the creek, leaving half the water in the cart for his return. None of the horses I had brought back could have undertaken this journey, but we fortunately had left a horse for Mr. Browne's use, which it was determined he should now take; and I may truly say, that no men ever witnessed the departure of a companion from amongst them with greater interest than did we the departure of Mr. Browne on this, to us, most important occasion.

"On the sixth day he returned to us with the joyful news that we were just in time, sufficient water was still in the creek to supply our wants during a passing visit, but no more; and what there was, he said, was as black as ink. It behoved us, therefore, to make all haste; but to have driven the cattle on without the means of relieving them once on the journey in such frightful weather was impossible; I therefore directed three other bullocks to be killed, and with their hides we were enabled to leave the depôt with 600 gallons of water, at 7 P.M., of the 9th of December, not daring to stir during the heat of the day. This remarkable retreat occupied eleven days, during six of which we travelled both night and day. We reached the Darling on the 20th, without the loss of a single sheep, and, under the Divine blessing, joined the party sent out to our relief at the junction of the Williorara.

"For seven weeks I was lifted in and out of the light cart; but I thank God that I rallied under the generous diet that had been sent to me by my friends, and reached Adelaide on the 19th of January, 1846, in comparative health."

Note.—Capt. Sturt's calculations of his longitudes are based upon that of Laidley's Ponds (Williorara), as laid down by Major Sir Thomas L. Mitchell.—ED.

III.—*On the Yang-tsze-kiang.* By the Right Hon. Lord COLCHESTER and Capt. COLLINSON, R.N., C.B.

(Read March 22nd, 1847.)

[AMONG the important results attending the campaigns in China, may be ranked the knowledge obtained of the course of this magnificent river from the sea to Nanking. In the autumn of 1840, Capt. Bethune, in H. M. S. 'Conway,' with the 'Algerine,' Capt. Mason, and the 'Young Hebe,' was directed by Admiral Elliot to explore the entrance of the Yang-tsze-kiang: a service of peculiar difficulty, which he effectively performed in the months of July, August, and September; and penetrated as high as Fuhshan, 80 miles from its mouth. The task of conducting the fleet up the river in 1842, was intrusted by Sir W. Parker to Captains Kellett and Collinson; who subsequently, with the assistance of Lieut. Hewett, I. N., completed the survey from Nanking to the sea.

The first portion of this memoir is the result of the labours of these officers; the latter part is from an account drawn up by Lord Colchester, who accompanied the embassy of Lord Amherst in 1816, and was by him directed to make a sketch of that portion of the river which the embassy ascended from Kwachow, at the outlet of the Grand Canal, to the Poyang lake, with such observations as the jealousy of the Chinese would permit.]

THE embouchure of the Yang-tsze-kiang is about 60 miles wide at Tsung-ming island, between points Conway and Yang-tsze-kiang: it is divided into two branches by that island, which is entirely alluvial, being 30 miles long and 9 broad. It was formerly styled Kiang-she, or 'The Tongue of the River,' and was used as a place of banishment for criminals, by whom embankments were built; thus, from being a sandy desert, it became very fertile, and was established about the end of the last dynasty (A.D. 1600) as a "Heën," or district magistracy of the third class. The cotton-crops are very abundant, and the land is lightly taxed in consideration of the exertions made to recover it from the sea. There is also a manufactory of salt, and a large fishery.

The eastern end of the island (called by the Chinese Changshwuy, or Deep Water Point) is in lat. $31^{\circ} 29' N.$, and long. $121^{\circ} 51' E.$ from Greenwich, and is distant 15 miles from the southern bank of the river; the intervening space being much obstructed by sand-banks.

Twenty miles to the E. of Tsung-ming is the island of Shaweishan, which rises to the height of 196 feet above the sea; its geographical position being $31^{\circ} 25' N.$ and $122^{\circ} 14' E.$

The Amherst rocks and Ariadne reef lie to the southward of Shaweishan; the former, which is 10 feet above the sea at high-water, is in lat. $31^{\circ} 11' N.$, and long. $122^{\circ} 22' E.$ The latter has 3 feet water over it at low tide, and bears W. by S. $\frac{1}{4}$ S., $7\frac{1}{4}$ miles from the former.

Gutzlaff Island (210 feet high) lies 22 miles to the S. of these; its position being lat. $30^{\circ} 47'$ N. and long. $122^{\circ} 11'$ E. It is 17 miles from the southern cape of the Yang-tsze-kiang.

None of these islands or rocks are sufficiently large to afford protection in bad weather, and they are too far from the entrance to afford good leading marks over the bar, rendering the navigation somewhat difficult. Arrangements have been made for the erection of beacons to facilitate the navigation, and the Chinese Government have been induced to guarantee their being preserved. Keying also has come forward most handsomely, having ordered the expense of their erection to be borne by his Government. The most important channel into the river is along the southern bank, in which there is a depth of 24 feet at low water; its trend being N.W. $\frac{1}{2}$ W. 50 miles. The shoal water extends to seaward, opposite the southern cape of the Yang-tsze-kiang, which is called Tee-pan-yen-sha, or Hidden Sand, by the Chinese. On the northern side, two of the sand-banks, viz., House and Bush Islands, at the distance of 19 and 29 miles from the sand-heads, have, like Tsung-ming, been reclaimed from the sea, but at a more recent date. The Whangpoo (or, as it has been improperly called, the Woosung River) joins the Yang-tsze-kiang opposite Bush Island, being rather less than a mile wide at the junction; on the right is the walled town of Paoushan; the village of Woosung is upon the same side $2\frac{1}{2}$ miles farther up, and is a miserably dirty street, but derives its importance from being the custom-house, at which all the Chinese junks bound to Siam, Cochinchina, Singapore, &c. clear, both on arriving and departing.

Shanghai (in lat. $31^{\circ} 15'$ N., and long. $121^{\circ} 29'$ E.) is on the left bank of the Whangpoo; the distance from Woosung by the river being 13 miles, and by land between 8 and 9. Shanghai is still called a hoo or lake. The image of the man who is said to have recovered it is preserved in the temples; and once a-year is borne round the walls, followed by a large portion of the population. This town, to which we have now access, and consequently uninterrupted water communication, by means of the Imperial Canal, with the northern provinces of the empire, has already more than fulfilled the eager anticipations of those who from the first took an interest in the place. Boats laden with cargo at Shanghai can communicate with eight different provinces, the most important, rich, and populous of the whole empire.

The facility of intercourse will, ere long, constitute this port a formidable rival to Canton; as there is not only the advantage of immediate communication with the Grand Canal, but we are also brought considerably nearer to those localities which produce the

staple articles of exportation, viz., tea and raw silk. Hoo-chow-foo, on the south-western bank of the Tae Hoo Lake, is the great centre for collecting the Nanking raw silk; it is reached from Shanghae in a dispatch-boat in 36 hours.

Hwuy-chow-foo, on the eastern side of the mass of hills, where the green teas are produced, is reached by easy water communication by boats laden with cargo in 10 days. The climate also being well adapted to European constitutions, and the intercourse with the natives being free from that ill-will which the Canton people appear determined to foster, will tend to render this a more favoured resort.

A plot of ground, with water-frontage, immediately N. of the city, has been allotted to foreigners; opposite to which vessels drawing 17 feet of water are enabled to anchor; and a custom-house for the especial use of the foreign trade has been erected in the immediate vicinity. (See *note* at the end of this paper.—Ed.)

Shanghae is a city of the third class, under the jurisdiction of a district magistrate; but in the city is the residence of a Taoutae, or Military Intendant of Circuit of the Departments of Soo-chow-foo, Sung-kiang-foo, and Tae-tsang-chow. This officer resides here in consequence of being *ex officio* the Comptroller of Maritime Customs of the province of Kiangnan; and consequently the superintendence of the trade with the western nations is under his control.

The Woosung river joins the Whangpoo to the N. of Shanghae, forming the northern boundary of the location allotted to us. By this river the grain junks go to the Great Canal, which it joins in the vicinity of Soo-chow-foo; a dispatch-boat can reach that city from Shanghae in 10 hours. The Taoutae once made a journey from Shanghae to Nanking in the winter in 9 days, as follows:—

By Water.	From Shanghae to Soo-chow . . .	36 hours
"	" Soo-chow to Chin-kiang-foo . . .	48 "
By Land.	From Chin-kiang-foo to Nanking . . .	14 "

He was there during the day, and, starting in the evening, had a quicker return. The iron steam-vessels of the expedition pursued the course of the Whangpoo river, in a southerly and westerly direction, 40 miles beyond Shanghae, in the first 30 of which they had a depth of more than 4 fathoms; at the distance of 23 miles from the town on the left bank is a creek, the entrance to which was defended by a battery, and which leads in all probability to Sung-kiang-foo. The latter, which most likely will be found within a mile of the Whangpoo, is the chief city of the department: the country in the immediate vicinity of the river is a dead flat: the only hill visible, which is 6 miles from the banks here, is in lat. 31° 8' N., and long. 121° 7' E. Seventeen miles

beyond this creek they arrived at the T'een-shan lake, having first passed over a depth of 6 feet. Here the Whangpoo ceases, but the water-communication unites with the Grand Canal in the direction of Kea-hing-foo, and thence leads to Hang-chow-foo (the provincial city of the Che-kiang province), which can be reached in 30 hours from Shanghai.

The boats are very comfortably fitted up for the accommodation of passengers, and usually contain three apartments. The boatmen occupy a raised platform at the stern, and the universal mode of propulsion is the scull, at which from three to six men work; they are fitted with two taunt (tall) spars, which are stepped, like sheers, in a frame on the roof for hoisting a sail; and so arranged as to be easily let down, in order to pass under the bridges, the height of the arches being generally less than 8 feet from the water. Channels, into which the tide flows, intersect the country in all directions, forming the means of communication throughout the whole district.

The country on the eastern side of the Whangpoo partakes of the same character. Cotton is everywhere extensively cultivated, as the vicinity to the sea is supposed to improve its quality. That this tract has long been gained from the sea is proved by the fact of there being four walled towns on this side, and also by the size of the trees. A portion however (about 13 miles long and 2 wide) has been reclaimed more recently: and the land is still extending, affording, without the outer embankment, excellent pasturage for cattle; and *some carts*, almost the only ones we met with in the southern parts of the empire, were seen here.

The bunds, or embankments, which are 10 feet high and 20 broad, are vast monuments of the labour and industry of the inhabitants, and plainly prove the dense population of the district, which is amply corroborated by the constant succession of villages and hamlets.

Returning to the main river, its width opposite to the junction of the Whangpoo is 6 miles, with a depth of 8 and 9 fathoms.

Bush Island lies 5 miles N. of Paoushan Point; the navigable channel is, however, confined to 2 miles by sand-banks, through which there is a channel in the vicinity of House Islet, which is used by the junks trading to the northern ports or to Tsung-ming; in it there is a depth of $2\frac{1}{4}$ fathoms at low water; it is intricate, and by no means so eligible a channel to enter by as the southern one. The same may be said of those on the northern side of Tsung-ming, no less than 4 of which were explored, until a depth of less than 3 fathoms was attained. The difficulty of fixing the positions in a rapid exploring survey of this description, which must have been attended with great labour and anxiety, was, in some measure, obviated by having recourse to the

artificial horizon on the ship's deck at slack tide; and is a useful hint to those who may be similarly situated in an enemy's country, without remarkable features to aid them, and with the natural horizon in that ill-defined state it usually is in the vicinity of large rivers.

Twelve miles to the N. of Tsung-ming is another large island, but of this portion, with the exception that you cannot enter the river on this side without passing over a depth of less than 18 feet at low-water, little is known. The junks, however, are numerous, and are seen at anchor among the shoals in all directions.

Between the Yang-tsze-kiang and the Whangho, or Yellow-River, there are 6 ports available for small vessels, and which communicate, according to the Chinese maps, with the Grand Canal, previous to its junction with the Yellow River; but all the pilots who were questioned concerning the navigation of the latter, described it as impracticable, owing to the strong tides and shifting sands; and that the junks, when opposite to its mouth, were compelled to stand far out to sea. At the mouth of the Yang-tsze-kiang the tide flows on full and change days until 12 o'clock, and the rise and fall is 15 feet. At Woosung the tides are 2 hours later, and the rise is 18 feet.

We left the main or S. branch of the river where the Whang Poo joins it, or 30 miles from the mouth; the deep-water channel continues on that side 17 miles further; and here is the confluence of the Lew-ho River, which is important, as it was deepened and made navigable direct to Soo-chow about 10 years since by the celebrated Commissioner Lin. Flowing from Soo-chow it forms a junction with the Woosung River at a place called Sha-ho; and then passing the district towns of Kwānshan and Sinyang (which are both contained within the same walls), and the departmental city of Tae-tsang, it reaches the Yang-tsze, being confined near the mouth by a dam, up which the boats are drawn by means of an inclined plane and capstans. The distances of these places from the river may be assumed as follows:—

Soo-chow	40 miles
Kwānshan and Sinyang	22 „
Tae-tsang-chow	14 „

The deep-water channel then takes a turn to the northward, passing close to Point Harvey (the western end of Tsung-ming, and named after a young midshipman of the 'Conway,' who was killed here in a skirmish with the Chinese, while landed with a foraging-party). Point Harvey is separated from Tsung-ming, and is called Chang-an-sha by the Chinese. N.W., 4 miles from it, is Mason Island (so called after the Commander of the

'Algerine'), the channel between the two being 3 fathoms deep; and that between Mason Island and the N. side of the river 6 fathoms deep and 6 miles wide.

From Harvey Point the trend of the reach is W. by N. $\frac{1}{2}$ N., and 14 miles from it the river contracts its width to 5 miles, with a depth of 13 fathoms; this may be termed the throat: the distance from the sea in a straight line being 55 miles, and by the S. channel 70 miles. The flood here runs only 4 hours; and some hills begin to make their appearance: those on the N. bank have a pagoda on them, and are $3\frac{1}{2}$ miles from the river's side. On the S. bank, and 8 miles inland, is another and larger range; and 9 miles above Point Plover (as the point on the southern side of the river at its throat has been termed) some low hills come down to the water's edge, which are called Fühshan by the Chinese; and here is an important communication with the Grand Canal, affording the shortest access to the city of Soo-chow from the river, the distance being about 30 miles. The Fühshan creek, on its way to Soo-chow, passes through a walled town, which it divides into the districts of Chang-Jeuë and Chaou-Wän; according to the Chinese maps, these are situated at the eastern foot of the hills mentioned in the last paragraph.

Thus far Capt. Bethune's chart carried us, and we had now to grope our way where the officers of the Chinese empire had reported to their master it was impossible for us to go; and the only information for our guidance was the account of the visit of the pirate Coxinga: who, Le Compte informed us, "passed easily up to Nanking;" but at present the Chinese vessels of carriage do not enter the river, either because the mouth is choked up, or it is disused that the knowledge of it may by degrees be lost.*

The channel between Plover Point and Fühshan is along the southern bank, but at Fühshan it crosses over to the northern side of the river; and it was some time before a sufficient depth of water for the 'Cornwallis' and the larger transports was discovered. On our return down the river two months subsequently, the freshes had washed away many of the shoals, and a good channel was formed; so this portion of the river, from its constant changes, will probably be found the most difficult part of the navigation; the distance across is 12 miles, and the course about N.

Here, on the N. side of the river, is the mouth of the Längshan creek, which leads to the city of Tung-chow-foo (the capital of this department), and which will probably be found about 4 miles from the river; from it there is an inland water-communi-

* The sea-borne junks terminate their voyage at Fühshan.

cation northerly, which, passing within 30 miles of the coast, and communicating with the sea by six estuaries, forms an inland navigation to the eastward of the Grand Canal, which it joins at Wei-gan-foo; having first passed the towns of Jookaou and Yen-ching, whence it takes a westerly direction, crossing the N. head of the Shay-yang lake. Yen-ching, by the Chinese maps, appears to have an immediate communication with the sea by the Sin-yang creek, and will probably be found a large emporium, but difficult to be got at in consequence of the shoals.

Tung-chow-foo, however, is likely to become hereafter a favourable mart to foreigners, as thus far the tides—those aids to navigation in rivers—are felt. Keashan, which at first appears like an islet, is an isolated cliff on the S. shore, about 16 miles from Fühshan; the trend of the intervening coast being N.W., thence it runs W. by S. $\frac{1}{2}$ S., and at the distance of 7 miles the hills again approach the river.

The town of Kiang-yin is situated on the southern side of the river, and 116 miles from the mouth, being nearly environed by hills; a spur from which, stretching out into the river, narrows its width to little more than a mile, and affords an eligible position for defence.

Kiang-yin is a place of importance, and affords another communication with the Grand Canal at the district towns of Kin Kwei, and Woo-yang, which are situated at the N. end of the Tae-hoo lake. On the N. side of the river there is the district town of Tsing-kiang-héén, situated close to the river's side, but was not perceived by us; it communicates with the eastern canal at Jookaou, and there is also a branch which runs westerly, nearly parallel to the river, to Taehing. The effect of the tide ceases to be felt here, there being no regular daily rise and fall or change in the direction of the stream.

The Yang-tsze, from Kiang-yin, takes a W. by N. direction; and 18 miles above the town is Starling Island, where the navigable portion of it becomes much confined, the deep water being close along its eastern shore.

The banks on the southern shore are low cliffs, with several large creeks communicating with the chief city of the department, Chang-chow-foo, situated on the Great Canal, and which will probably be found about 8 miles from the river. The N. shore, which is very little elevated above the river, abounds with rushes, and is intersected with creeks, some of which communicate with Tae-hing, a town of the third class, about 7 miles inland: and, if faith can be placed in the Chinese maps, affords another inland navigation, as channels branch off to Jookaou, on the eastern canal, and also to the city of Tae-hing, and from thence to the Imperial Canal. Starling Island is 5 miles long, and towards the

N. end is separated into 4 by narrow channels: opposite to the end of it, on the western side of the river, is Shayaou creek, which, after separating a large tract, communicates with the main branch 20 miles higher up; there is a depth of 3 fathoms throughout it. From this island the river trends N. 10 miles, the deep water being on the western side; it then takes a westerly turn, with a middle ground, a portion of which is dry when the river is low. Pursuing this course 8 miles it turns to the S., and the Chooshan hills, with a temple on their summit, will be seen extending their spurs into the eastern side of the river; from their summit a splendid *coup d'œil* of the whole country was obtained.

The Shayaou creek, mentioned above, joins the main river immediately to the N. of these hills. The course of the river to the W. of Chooshan is most curious, forming a circular basin about 9 miles in diameter, which, however, was nearly filled up by 6 islands. The navigation, notwithstanding, proved simple enough, as the deep water was found along the right bank of the river: but the strength of the current proved a serious obstacle, compelling us to wait several days for a slant of wind. Following the southern shore (which here presented a nearly continuous range of hills), at the distance of 12 miles the river took a sudden turn to the W.; disclosing at once Kinshan, or Golden Island, with its handsome pagoda and beautiful buildings: attention, however, was first of all attracted by Silver Island, which lies exactly at the turn of the river, being separated from the southern bank by a channel 3 cables' length wide, through which the current was boiling with great rapidity. The temples on it are prettily situated, embosomed in trees, with which the islet is nearly covered; at the water's side was a spacious landing-place, ornamented with fantastic gateways, and on the main opposite, which was a precipitous cliff, was a broad flagged quay, affording the junks the means of tracking their way against a current which even the steam-vessels found a difficulty in stemming. Galleries were run along the face of the cliff, communicating with chambers hollowed out of the rock, the strange shaped peep-holes out of which afforded great amusement.

The reach now opening upon us took a W. by S. direction; and upon the southern shore, or right bank of the river, 2 miles above Silver Island, and about 600 yards from the water-side, appeared the walls of a city, which proved to be the one we were in search of, viz., Chin-kiang-foo. The opening of the Imperial Canal was not distinguished; but we discovered what pleased us nearly as much—large heaps of coal piled up by the water-side ready for our use. Some buildings also, totally unlike the Chinese style of architecture, and corresponding in some measure with our own, caught our attention, and proved afterwards to overlook the entrance to the canal.

The accompanying plan of the communications of the Imperial Canal with the river will show its connexion better than any description.

Chin-kiang-foo, known as well by the denomination of Kingkow, or Mouth of the Capital, is the residence of the Intendant of Circuit of the Departments of Chin-kiang and Chang-chow. Here also is a Mwanchow Tartar garrison under the command of a Lieutenant-General.

Kinshan, or Golden Island, situated $1\frac{1}{2}$ mile west of the city, was found to be in lat. $32^{\circ} 13'$ N. and long. $119^{\circ} 31'$ E., 182 miles by the river, and 130 in a straight line from the sea; it is nearly in mid-channel, which is here three-quarters of a mile wide, and covered with trees and buildings (the tiles of which are gaudily glazed), and was pronounced by every one to merit its name.

The southern bank of the river is beautifully diversified by hills, with which the city is nearly surrounded: the N. shore presents nothing but a level plain, fringed towards the water with reeds, except to the N.W. of Golden Island, where low cliffs make their appearance. Here are the remains of the walled town of Kwachow, now nearly deserted, but through which the principal arm of the Imperial Canal passes. About 6 miles N. of it is the temple of Kaou-min-sze, in the angle formed by the division of the Imperial Canal into two branches,—one leading to Kwachow from Yangchow-foo, which is distant about 6 miles, and is the chief city of the department; and the other to Echings, beyond which it joins the Yang-tsze, forming the usual communication with Nanking. This temple* contains 200 priests, and within its enclosure stands a pagoda, ascended by 136 steps: from the top is an extensive view. To the N. is the city of Yangchow-foo, with its pagoda, surrounded by a level and well-wooded country, in many places inundated;† under foot are the gardens of the temple, containing artificial rocks and pieces of water: to the S. the branches of the canal wind their way to the Yang-tsze, that river itself, with the island of Kinshan, and an extensive range of high hills, bounding the view in that direction.

The surrounding country is cultivated with rice, beans, buckwheat, and Kaou-leang (a species of millet, from which is manufactured an ardent spirit) in small quantities; mulberry-trees, bamboos, the small-leaved elm, and other trees were observed.

Six miles west of Kwachow commences a low island, separated from the N. bank of the river by a channel about the breadth of the Thames at Richmond; it is 5 miles long, low and flat, chiefly covered with tall reeds, used by the Chinese for embankments. The main body of the fleet passed on the southern side of it, the northern channel having only 15 feet in some places.

* Sir G. Staunton.

† Possibly rice-fields.

Opposite to its west end, on the southern shore, is a large creek, which will probably form another island, and communicate with the main river near the Sekea hills, thus giving the boats an opportunity of escaping the strong stream in the main branch, which generally runs 3, and sometimes attains a velocity of 5, knots per hour. Our large Chinese chart, which would probably have set the question at rest, unfortunately does not extend to the westward of Chin-kiang-foo.

The mouths of the canals—for there are two of them which communicate with Eching, and thence join the Imperial Canal—are 13 and 14 miles from Golden Island, the river running due west.

We were now no longer in a “terra incognita,” having come, at Chin-kiang-foo, on the track of Lord Amherst’s embassy, and were supplied from the Hydrographic Office with a chart of this portion of the river by Lord Colchester, who accompanied that expedition.

Great numbers of vessels, of different construction, were lying in this channel: the salt-junks are very remarkable, being built nearly in the form of a crescent, the stern rising in some of them nearly 30 feet and the prow 20, while the mast is 90 feet high: * they are said to convey salt from the coast up the Chang-kiang (the conventional name applied to the Yang-tsze by the inhabitants), as high as the province of Hookwang; the return-cargo generally consisting of coal. They differ much in their build from the junks at Shanghai, and, not having been noticed at the latter place, are probably not permitted to pass lower down the river than Fühshan; many of them had chain-cables and iron anchors or grapnels.

The river beyond the West Eching creek takes a W.S.W. turn; 3 miles above it the most considerable range of hills we had hitherto seen on the N. side of the river, comes down to the water-side.

Seven miles further on the same side is the mouth of the Lewho creek, flowing into the Yang-tsze-kiang from the N.W. The pagoda of Lewho-hëen stands on a hill, 7 miles in the same direction. Immediately opposite, on the southern shore, are the Sekea hills, the highest of which is remarkable from two trees and a small joss-house on its summit, whence a fine view of the country was obtained, and the whole course of the river from Golden Island traced: on the N. shore another creek was seen joining the Lewho, one 3 miles S. of the pagoda, and running into the main river 5 miles further up: directly at the foot of the hill was a creek, which was traced so far in an easterly direction as to give rise to the surmise that it communicated again with the river, forming a large island.

* Sir G. Staunton.

To the westward the view was obstructed by numerous hills, which now rose on both sides of the Kiang, rendering it doubtful which way it would turn, and forming an agreeable change to the dull monotony of the level country we had hitherto been traversing.

Three and a half miles further, the river changed its course four points, the reach trending W.N.W., the force of the stream on the southern shore being turned by some bold red bluffs, which were named after the 'Cornwallis' (Sir W. Parker's flag-ship), in order to perpetuate the name of the first line-of-battle ship that penetrated thus far from the sea, and sailed farther from salt water than any of her predecessors, except those launched on the Canadian lakes.

Two miles from Cornwallis Bluff the island of Tsauheia commences; it is nearly 7 miles in extent, being separated from the south shore by a channel 200 yards wide, with a depth of 5 and more fathoms.

The main branch, which is a mile wide, continues in a W.N.W. direction 5 miles from the bluff, and then takes a S.W. $\frac{1}{2}$ S. turn, the north-western shore being lined with hills, at the southern termination of which was a pagoda (Pingshan) and a small battery.

Supposing, from all accounts, that the city of Nanking was 3 miles inland, and deeming ourselves opposite to it, the two little surveying-vessels, 'Starling' and 'Plover,' were left here, and their captains returned in the iron steam-vessels to pilot the fleet up. In the interim, Lieut. Bate of the 'Plover' pushed his researches 3 miles further, and, coming upon the angle of a walled town, had the satisfaction of discovering that the flag-ship could be placed within 1300 yards of Nanking, the defences of which appeared well manned and armed, but, instead of interfering, or preventing his making a plan by which the 'Cornwallis' was conducted at once to her berth, they sent on board an officer with a present and a paper, which afterwards proved to be a proposal for peace.

Thus a river-navigation of 225 miles was concluded, 150 of which were previously unknown; and the fact that more than 70 sail of vessels penetrated thus far without encountering a disaster sufficient to render any one of them inefficient, will at once reflect creditably upon those who commanded, and, at the same time, prove the river admirably adapted for navigation.

The city of Nanking, at present called (officially) Kiangning, or the chief city of that department, is about 31,700 yards, or 18 English miles in circumference, being shaped something like a ham that has been cut in two different places; the knuckle, which is the northern end, being 500 yards from the water side, and nearly opposite the southern end of Tsauheia island.

Commencing on the western side, the walls of the city, which

are generally above 40 feet high, take a S.E. by S. direction, enclosing some low hills; a canal or creek runs nearly parallel to the wall, in some cases approaching close to it; at its entrance on each side is a considerable suburb, some of the houses in which had more than two inches water on their floors during a fresh in August.

• In an angle of the wall, and not quite a mile from the N. corner, is the Esung gate, which is little used, this portion of the city being but thinly inhabited. Two miles further the hills end, and the wall takes a S.E. direction. On this face are the Shiching and Sanshan gates, the whole length of the south-western side of the city being rather more than 9000 yards. This angle is thickly populated, and forms an area (exclusive of the Tartar portion) of about $9\frac{1}{2}$ English miles. The canal passes close under the corner of the wall, and there is a branch leading off to the westward, which communicates with the Kiang 4 miles to the S. of Tsauheia island. The wall then turns to the E. by S. for 1600 yards, and nearly midway is the Tsupan gate, opposite to which, and on the western side of the canal, stands the celebrated porcelain tower: it is of nine stories and 260 feet high, with projecting balconies at each story, the balustrades of which, formed of stucco, are highly glazed in gaudy colours.

The view from the summit was exceedingly pleasing, as nearly the whole of the interior of the city could be traced, together with the adjacent country; the large tent-like roofs of the temples, and the curious gable-ends of the pawnbrokers' shops, shone out among the sea of houses below, which were so closely packed together that the streets could scarcely be traced. Towards the east end an inner wall was seen, separating the Tartar cantonment from the remainder of the city, and within this another enclosure, surrounded by water, which, from the size and appearance of the buildings within, was presumed to be an imperial residence. Directly underneath were the large court-yards and extensive temples of the monastery to which the tower belongs, with low undulating hills covered with copsewood in their rear.

Further to the E. was an extensive plain, crowded with hamlets and good country-houses, among which, and adding greatly to the beauty of the prospect, canals were seen in every direction. To the N.E. a high hill threw out its spurs until one of them almost protruded into the city; and at its base the mausoleum of the Ming dynasty, with its paved approach, guarded by colossal images of men and beasts, could be distinctly made out.

The wall takes an abrupt turn northerly 1700 yards, then easterly 2500 yards; in the retiring angle is the Thangsi gate, and here the Tartar city commences; then it pursues a N.N.E. course 2800 yards. On this side the canal, which has hitherto followed

the course of the wall, ceases, in the vicinity of the Chang-yan gate.

The N.E. face is irregular, running first N.E. 500 yards, and here the Tartar cantonment is again separated from the town by a wall running W.N.W. until it meets the other from the Thangsi gate; the whole area of the Tartar city being 11,200 yards. The outer wall then goes N. by E. 320 yards, W.N.W. 900, N. by E. 240, and N.N.E. 80, when we are at the N.E. corner, and opposite to the Changshan hills, the summit of which is crowned by a small white building, whence another bird's-eye view of the city and adjacent country is obtained.

The wall, which here is lofty (40 to 50 feet), turns to the westward, enclosing some low hills, and at 1000 yards is the Taiping gate, forming the principal thoroughfare from this side of the city, and whence a good paved road leads to Kwanyinmun, situate on the river's side, about 7 English miles distant, in the creek which forms the Tsaouheia island.

To the W. of the Taiping gate is a shallow sheet of water, along which the wall runs irregularly, first in a westerly, then in a northerly direction 5300 yards, and here is the Teshing gate; within this portion are isolated hills, with some temples upon them, but there are not many houses.

Pursuing an easterly direction 3700 yards, and N.W. by W. 1400, we arrive at the north end of the city, whence a S. by W. turn 700 yards brings us to the point from where we started.

Remains of an ancient wall encompassing the present city, and embracing an area of 28 English miles, were also traced, but in some instances the vestiges were difficult to detect, and it never appears to have been of the height, or built with the same solidity, as the other.

At Kwanyinmun there is a temple on a rocky promontory jutting out into the river, and there the gentlemen of the embassy appear to have landed, as Sir George Staunton mentions a large slab of black marble bearing an inscription, that many vessels having been lost in the eddies of the stream during the night beyond this point, this stone was erected in the seventh year of Keenlung, to advise and warn all persons to anchor here, so as to pass the next headland during daylight.

A range of hills commence at Kwanyinmun, and continue along the shore, facing the island of Tsaouheia until within a mile of Nanking. On the same side, and nearly opposite the S. end of this island (which was named Theodolite Point, and was determined to be in lat. $32^{\circ} 6' 20''$ N., and long. $118^{\circ} 52'$ E.), an ample store of coal was found.

The river opposite the city is without islands, and a mile and a half (English) across, with a depth of 25 fathoms and rocky bottom.

The current runs at the rate of from 3 to 5 knots per hour, rendering it necessary to steer the vessels while at anchor.

On the opposite or western bank an extensive wall was traced, probably enclosing the town of Pookeu.

The furthest point reached by the expedition was 13 miles above Nanking; where the river, having previously expanded to more than 3 miles, including the islands, which are flat and covered with rushes, again contracts between two headlands to a mile: that on the right bank is called Sanshan.

The 'Modeste,' Captain Watson, being detached here to interrupt the communication, witnessed the Chinese dredging for coal; the probabilities are, however, that it was not *in situ*, but the result of a wreck.

The climate of this part of China is said to have gradually become much colder in the twenty years preceding 1816; previously it had hardly ever been known to freeze or snow at Nanking, which it now (1816) does constantly every winter. The N.E. monsoon usually sets in before the middle of October. Chen-eu-tsuy, in lat. by observation $31^{\circ} 42' N.$, and about 30 miles from Nanking, is a small village on the left bank of the river at the mouth of a canal leading to the city of Ho-chow, a town standing on a rising ground about 3 miles from the river, and appeared to be a place of some trade. The river from Nanking to this place is wider than below, and nearly free from islands. About 11 miles above Chen-eu-tsuy, the Kiang receives the waters of the New-to-ho, a small river flowing from the W., and passing the city of Han-shan-hěen, about 15 miles from its mouth.

About 2 miles beyond the mouth of the New-to-ho are two remarkable rocky headlands, one on each side of the river, called Tung-leang-shan and Se-leang-shan (Eastern and Western Pillar Hill).*

The city of Woo-hoo-hěen, in lat. by observation $31^{\circ} 20' N.$, stands at a short distance from the right bank of the river; it is very populous, and appeared to carry on a greater trade than any other place seen by the embassy since entering the Kiang. The distance from Nanking to Woo-hoo-hěen by the river is about 50 miles. There are numerous islands in the river between Chen-eu-tsuy and Woo-hoo-hěen.†

About 15 miles above Woo-hoo-hěen a considerable stream joins the Kiang from the W., said to come from the lake Chaou-hoo.

Tung-ling-hěen is about 48 miles S.W. from Woo-hoo-hěen: though a city of the third class, it is small, the walls which surround it very low, the streets ill paved, and the shops inferior. It

* Se-leang-shan, about 500 feet high.—DAVIES.

† Large rafts of timber, with sheds erected upon them, dropped down the river by means of anchors; when seen at a distance they resemble small islands.—ELLIS.

stands in a beautiful country, consisting of a succession of hills covered with firs and small oaks, and valleys cultivated with cotton and buckwheat. The right bank of the river near Tung-ling-hěen was a steep rocky cliff of 50 to 100 feet. Nine miles beyond Tung-ling-hěen is the large village of Ta-tung-chin. The lat. was found by the mean of several meridian altitudes of the sun to be $30^{\circ} 45' N$. The tea-plant and tallow-tree were seen in this neighbourhood. To the S. is a high range of mountains called the Kew-hwa-shan. The course of the river continues interrupted by a series of islands, some highly cultivated, others producing reeds only.

Gan-king-foo, the capital of the province of Gan-hway, stands on the left bank of the river, which there flows nearly due E. : it is 66 miles from Tung-ling-hěen. It is large and populous, and seems to carry on a considerable trade; near the eastern gate is a handsome pagoda of seven stories.

Tung-lew-hěen, about 24 miles S.S.W. from Gan-king-foo, stands on the right bank of the Kiang, at the mouth of a stream falling into the river from the S.E. The walls are extensive, but they contain a considerable quantity of vacant ground.

About 15 miles above Tung-lew-hěen is Wang-kiang-hěen, on the left bank of the river, on the border of the province of Kiang-se.

Eleven miles above Wang-kiang-hěen, and 3 miles below Pang-tũh-hěen, is the Shaou-koo-shan, a remarkable conical rock about 200 feet high, standing in the middle of the river. Its northern side, completely bare, and almost perpendicular, was covered by innumerable flocks of the Yu-ying, or fishing cormorant, but on the western side is a small monastery consisting of several buildings rising one above the other. The only ascent is by a flight of steps. Above the buildings is a grove of trees, and the summit is crowned by a temple of two stories, with projecting roofs. One of the boats being obliged to anchor above this rock, near the middle of the river, found the depth to be 14 feet.

Chin-kang-leao is a small village situated in an extensive plain on the left bank of the river. Its lat. by observation is $29^{\circ} 47'$ north.

About 10 miles above Chin-kang-leao is the small town of Hoo-kow-hěen, whose walls (like those of Pang-tũh-hěen) extend along the summits of the surrounding hills, enclosing much unoccupied ground. This city is built at the foot of a range of hills extending along the right bank of the river as far as Tung-lew-hěen. It is about 74 miles from Gan-king-foo, and 285 from Kwachow. At this place the Yang-tsze-kiang receives a considerable accession of water from the Poyang lake, the stream issuing from the lake appearing nearly equal in width to the river above the junction, each about a mile broad.

Soon after passing Ho-kow, the embassy quitted the Yangtze-kiang, after having proceeded up it about 285 miles in the course of 26 days. That part of the river which they navigated flows in a N.E. direction, with a current of more than 2 miles an hour, till it meets the tide near Nanking. Its mean breadth is from a mile to a mile and a half, except where interrupted by islands; but in some places it expands to 3 miles. The islands are numerous, and in general flat, some highly cultivated, others covered with tall reeds, used for embankments or fuel. The country on the right bank of the river is mountainous, and in many places the hills are uncultivated, but on the left bank are extensive plains in the highest state of cultivation.

The great land-route from Canton to Peking crosses the Yangtze-kiang by a ferry, not far above the confluence of the waters from the Poyang lake.

Note.—With reference to the Port of Shanghai, our present favourable position is mainly attributable to the firmness, discretion, and conciliatory bearing of Major Balfour, of the Madras Artillery, our Consul at this port from the period of its being thrown open for trade in November 1843 to September 1846.—*Ed.*

IV.—*Remarks on the Isthmus of Mount Athos.* By Lieut. T. SPRATT, of H.M.S. 'Beacon.' Communicated by Commander GRAVES, F.R.G.S.

[Read 9th March, 1846.]

IN the latter part of August 1838, I was sent by Commander Graves, in the 'Beacon's' tender 'Isabella,' to measure across the Isthmus of Mount Athos, at the spot where the canal was cut by Xerxes. (Herodotus, vii. 22, &c.) The reason assigned by the historian for making this cut was the remembrance of the loss sustained by the fleet of Mardonius (B.C.) in attempting to navigate the shores of this mountainous peninsula. (Herod. vii. 22; vi. 44.)

As the examination of the remains of this work of Xerxes occupied part of my time during the survey of the Isthmus, I offer a few observations to explain the accompanying plan which was then made of it, the more particularly as the few remaining traces of this canal may have totally disappeared in another century, when the absence of such evidence might perhaps again produce doubts upon the truth of this historical record, such as have been expressed with regard to the veracity of Herodotus on this point, both in ancient and modern times. These doubts, however, as well as those of the eminent traveller Pococke, who is one of the sceptics of modern times, have been fully confuted by the testimony of Choiseuil Gouffier, Dr. Hunt, and Colonel Leake. A careful examination of the locality removes all doubt.

On the 27th of August we entered the Gulf of Mount Athos, now Monte Santo. After passing close along the west shore, in sight of the monasteries situated at the base of the magnificent mountain which gives its name to the Gulf, we sailed within the wooded island of Mouillane, and anchored off the S. extremity of the canal, opposite to two rocky hills, between which the canal opened to the sea through a natural valley, which descends from the hilly ground in the centre of the isthmus. This hilly appearance of the isthmus certainly looks unfavourable to the execution of the design of Xerxes; but Herodotus, in his minute description, has not neglected to mention the undulating or hilly character of the part of the isthmus through which the canal was cut.

Herodotus (vii. 23), in his account of the manner of carrying on the work of excavation, shows that no impediment existed in the nature of the ground; for we have an illustration of the softness of the material dug through in the double labour which was said to have befallen the parties engaged in cutting it, by the falling in of the sides or banks of the canal; the Phœnicians alone avoided this by making the excavation in the highest part twice the width of what it was to be in the lowest. This fact is confirmed by the geology of the district. The part of the isthmus through which the canal was cut is a bed of tertiary sands and marls, so that this work of the Persian king, on which three years were spent, is really insignificant compared with many works that are executed at the present day.

The veracity of Herodotus has probably been questioned upon two grounds: one from a false idea of the magnitude of the project, and the other from the apparent absurdity of such an undertaking. The above facts confute those who maintain the former opinion. The motive of the king, as Herodotus conjectures (vii. 24), was to show his power and leave a memorial.

Two rocky hills embrace the S. extremity of the canal: the highest of them, which is of a remarkable conical form, and rises to the height of 155 feet, stands on the E. side of the canal. The other, which is about 30 feet high, terminates a chain of heights which descend from the hills at the back of the modern village of Erissa or Erissos, apparently the ancient Acanthus. Between the two hills is a small pool, in a ditch or water-course, with steep clay banks, 10 feet deep and 120 broad. Beyond the ditch the pool narrows gradually until it is joined by a watercourse and a small stream which flow into it through a valley on the W. side of the isthmus. Turtle and small eels abound in the swampy bed of the watercourse. The ditch, however, continues about 100 yards beyond the junction of the watercourse, towards a hollow or depression of the isthmus, through which the canal

must have been cut, but there is nothing in this part that would lead a casual observer to suppose that the ditch was more than the natural result of the winter torrents flowing from the neighbouring hills; and certainly it shows no indications of a connexion with an artificial cut. Further on, however, in the more elevated part of the isthmus, the evidences of the canal are more decisively indicated in a succession of swampy hollows which run in nearly a straight line across, and are from 2 to 8 feet deep, and from 60 to 90 broad. These hollows may be traced nearly to the top of the rise, where all evidences of the canal are destroyed by a road which leads to the promontory. Two or three other tracks or paths cross the site of the canal at different points, and have each had a similar effect. It is indeed surprising, considering the period which has elapsed since the canal was cut, that even a vestige of it should now remain.

The highest part of the isthmus through which the canal was cut is 51 feet above the sea, and this appears to have been about the original level of the ground previous to the excavation; so that the greatest depth of the soil cut through could never have exceeded 60 feet, and this only for a short distance, for the hilly ground occupies but a limited portion of the isthmus, between which and the N. shore is a small alluvial plain. The traces of the canal on descending to this part are less distinct than on the opposite side of the isthmus, but still the chain of hollows which here also indicate it, have a decidedly artificial character, quite different from a natural watercourse. Through the plain all traces have disappeared, and also the mouths of the canal, which is not surprising, for Herodotus mentions the difficulty which was felt in keeping them open, to effect which mounds were made about the mouths of the canal on account of the surf (*ἐπ' ἄλγος*), in order that the mouths might not be filled up. This plain was probably the meadow, in which a market was held for the sale of provisions and necessities to those engaged in the excavations. (Herod. vii. 23.)

Near the shore is a small shallow marshy lagoon, which seems to occupy the position of this mouth of the canal, and near it some Hellenic foundations were observed by Colonel Leake, which may have had some connexion with it. The distance between the two shores is about 2500 yards, but the length of the canal rather exceeded that distance, in consequence of its being slightly oblique to the direct distance across the isthmus. Herodotus estimates the width of the isthmus, at the place where the canal was made, at about 12 stadia, or 7200 Greek feet (vii. 22), which agrees very well with the true dimensions.

Herodotus (vii. 22) says that Sane, an Hellenic city, was situated on the isthmus in which Athos terminates. The cities situ-

ated within (ἐντὸς) Sane, and on the side towards Athos (ἔσω τοῦ Ἀθ.), which the Persians then designed to make insular instead of continental, are these—Dion, Olophyxus, Acrothoon, Thyssus, Cleonæ. There is no difficulty in this passage to those who are acquainted with the language of Herodotus. Sane was on the isthmus, and it is a probable inference from the whole passage, that it was on the N. side of the canal. Thucydides (iv. 109) says, “That the tract called Acte projects inwards (that is, towards the peninsula of Athos) from the king’s canal; and Athos, a lofty mountain in the Acte, terminates on the Ægean Sea. It (the Acte) contains Sane, a colony of Andros, by the side of the canal turned to the sea towards Eubœa, and the other cities are Thyssus and Cleonæ, and Acrothoon, and Olophyxus, and Dion.” The inference from this passage is that Sane was within the canal towards the isthmus. Its site is generally supposed to be near the S. extremity of the canal, but the spot cannot be clearly identified by any existing remains, much less at the spot assigned to it in the map of the isthmus published by M. Choiseuil Gouffier in 1791, where, certainly, no such ruins are to be seen; and in neither locality is the ground such as was generally chosen by the Greeks for the position of a city, and particularly such a one as Sane, which resisted the army of Brasidas, and refused to submit when he had encamped under its walls.

In his enumeration of the cities in the peninsula of Athos and on the isthmus, Pliny (*Nat. Hist.* iv. 10. ed. Harduin) does not mention Sane. Uranopolis, which was founded by Alexarchus, brother of Cassander, king of Macedonia, and which Pliny does mention, has been considered to be on the site of Sane, on the supposition that it merely took the name and place of that city; but I accidentally found the ruins of a city which had escaped former travellers, on the W. side of the canal, which may be the site of Uranopolis. These ruins are situated on the summit of a hill about a mile to the westward of the canal, and consist of the walls of an Hellenic fortress, the foundations of the entire circuit of which are visible above the ground, and at its N. face, near the foundations of a round tower, two or three courses of the squared smooth blocks of limestone of which it was built appear above the ground. The enclosed area is strewn with broken fragments, but no buildings are visible. Crossing the low hills to the S. of the fortress is a long low wall with towers at intervals; it is evidently an ancient construction, though composed of small unhewn stones, and appears to have been a line of demarcation, as well as a defence between the territory of the cities within the promontory and those without, of which the nearest was Acanthus. I did not observe any remains of a similar wall descending from the fortress to the N. shore, but my examination

of the port was not sufficient to enable me to speak positively on the point.

The territory of this city must necessarily have extended over the low ground much within the canal, for any extension to the westward would approximate too closely on the Acanthian territory; and, besides, the range of hills situated between them presents a natural boundary between the cities and territory of the peninsula and continent.

On the E. side of the canal a long low ridge stretches across the isthmus, and juts out into the sea to the N., forming a rocky point which bounds the bay of Vatopidhi, so named from a ruined metoki at its western extremity. This ridge is terminated on the S. side of the isthmus by the high conical hill which stands near the S. extremity of the canal. On this ridge are the ruins of two metokies or farms, which were formerly dependent on the monasteries of Pavlo and Kilandari, situated at the foot of Mount Athos. These, as well as several others in the neighbourhood, were built in the form of a castle, for security. Between the above two metokies and the conical hill is a small mound standing on the summit of the ridge, which appears to be artificial. Col. Leake has also remarked its artificial appearance in his 'Travels in Northern Greece.' This may be the mound erected by the army of Xerxes in honour of Artachæes, one of the directors of the canal, who died whilst the king was staying at Acanthus. (Herod. vii. 117.)

The Acanthians used to sacrifice to Artachæes as a hero; from which fact, and the context of the whole passage in Herodotus, we may infer that the mound was near Acanthus. Near the base of the mound are five or six hewn blocks, which are the only ancient remains now visible on any part of the adjacent hills, and apparently too insignificant to mark the ruins of an ancient city; and the above conjecture seems to explain their existence better than that they are the remains of the city Sane, as some suppose.

The composition of the hills included in the present plan is divided between gneiss and mica slate, and tertiary beds of marl, sands, &c. Those which lie on the E. side of the canal are composed of the former, as well also as the two rocky hills which embrace the S. extremity of the canal, where the schists are nearly in a vertical position, and contain garnets in great abundance. The hills to the westward of the isthmus as far as Acanthus (Erisso) are composed of horizontal beds of a tertiary deposit, apparently a freshwater formation, but no fossils were seen in it.

The order of superposition at the part which I examined, was first 150 feet of stratified sands and clays, 100 of indurated clays

and marls, blue and white, which was capped by 20 or 30 feet of a white calcareous stratified rock, in which were small stony nodules.

V.—*Abridged Account of an Expedition of about 200 miles up the Gambia, by Governor Ingram.* Communicated by the Right Hon. the EARL GREY.

[Read 26th April, 1847.]

ON the 17th of December, at noon, 1842, Governor Ingram embarked at Bathurst on board the cutter 'Emma,' for Mac Carthy's Island, accompanied by the Rev. William Fox, General Superintendent of the Wesleyan Mission at the Gambia, Mr. Thomas Chown, a merchant, and Mr. Simon Pignard, interpreter of native languages to the Colonial Government. At 4 P.M., passed Dog Island, Laming Point about 7, and at 8 arrived off Albreda. A French war-steamer was lying at anchor at Albreda, having the Prince de Joinville on board, and having ascertained that his Royal Highness was desirous of visiting the town and public buildings at Bathurst on the morrow, Governor Ingram returned to receive him, resuming his voyage on the 19th, and landing at Albreda at 5 P.M. of that day. The Government residence is described as a wretched-looking dilapidated building, and so entirely surrounded by trees, jungles, rank weeds, and high grass, that it could not but be unhealthy, did not its low and swampy situation already make it so. The native village called Albreda is about 200 yards further from the river-side than the buildings occupied by the French, and stands on higher ground. The party having disembarked, walked to Jillifree, a small village, though one of the best on the banks of the Gambia. Here were great numbers of very fine orange-trees, lime-trees, and groves of bananas. Many of the native Mandingoes speak English, and a white face is by no means a novelty. In the neighbourhood were numerous ant-hills, some of them 12 or 15 feet high, and nearly as much in diameter; the white ant is exceedingly destructive, frequently destroying the floors, beams, doors, and window-frames of the buildings. Re-embarked, and, on the 20th of December, passed Jillifree, James Fort, Vintan Creek, Moota Point, and the large native town Tankerwall. The natives have a tradition of there being a tree, haunted by an evil spirit, called the 'Devil's Tree,' on Moota Point, and that it occasionally burns at night. They hold it in great dread, and will not venture near it. Arrived off Jamaly Cunda, and landed: twenty years since this was the most flourishing place on the banks of the river, being then the rendezvous of the gold mer-

chants from the interior: it is now of comparatively little importance: the native inhabitants are peaceable and well-disposed. Passed Tinderbar, once a town of much trade, but now rapidly declining, and arrived at 11 P.M. off Devil's Point. Weather foggy and cold: Thermometer 59° in the forenoon, at 3 P.M. 65° ; heavy dews during the night. Passed Balana, a small town situated in a very picturesque spot at the foot of a high hill of sand and ironstone. This would be a healthy spot for Western Africa were it not for the mangroves which grow on either side of it, which, flourishing only in swampy muddy places, prove by their mere presence any place to be unhealthy. The thermometer at 8 A.M. stood at 61° , and at 2 P.M. 74° .

22nd. Passed Bye and Bading Creeks; these are both noted for the numbers of alligators which infest them, some being about 12 feet long. In the afternoon passed Brandy Creek, Barraconda, Observation and Doomasansang Creeks on the right, and Bambally Creek on the left; arrived within 4 miles of Cower, and landed. The trade of this town is considerable; the principal articles of produce being corn, millet, hides, country cloths called pangs or paynes, ground-nuts, ivory, and wax. There are several large native towns at a short distance from the trading port, and these all bear the name of Cower. The articles most in demand are rum, tobacco, gunpowder, iron-bars, coral and amber beads. The largest-sized Gambia horses are here to be obtained, but the prices are comparatively high.

23rd. "Passing Cower, proceeded towards Yanimaroo, which having reached within 8 miles, and while waiting for the flood, dispatched the interpreter with a message to, and a present for, Sandebar, the chief king of the country, requesting him to meet me at MacCarthy's Island. Mr. Pignard brought me a message in reply, requesting I would meet him at Yanimaroo, where he would wait for me; proceeding thither with the flood, I landed and was received by the king. I found him to be a man of superior intellect to the great mass of his subjects. On expressing my wish to enter into a treaty with him, according to the 'model agreement' received from her Majesty's Government, he willingly acquiesced; and when pressed by Mr. Fox and myself to send one or more of his sons to MacCarthy's Island, to be educated at the Wesleyan Institution, he, after some hesitation, consented.

24th. "Landed this morning on the largest of the three Baboon Islands, having passed on our way the celebrated Red Hill of Casson and the village of Contoo. This hill stands about a mile inland, and is remarkable for its rich deep red colour; we estimated its height at 150 feet. The Baboon Islands are of little value, being inhabited only by a few natives; they are, however, infinitely better than the Deer Islands, which are little else than

immense swamps, and uninhabitable from their unhealthiness. About 3 P.M. passed the native village Brekama, and, approaching the three Kayeye Islands, we saw numbers of hippopotami; they frequently appeared above water, but close to those parts of the shore which were covered with reeds and rushes.

25th. "Landed at Fort George, MacCarthy's Island, and visited a portion of the town entirely inhabited by liberated Africans. Some of these had prospered, and, to judge by the comfortable and cleanly appearance of their houses, many were evidently in easy circumstances; their wives and children were decently dressed in English costume, and seemed contented and happy. A large number, however, did not present so pleasing an appearance, their huts and their persons manifesting the presence of penury; extreme want, or death from positive destitution, being unknown in this country. In the afternoon visited a native village of 800 inhabitants, about half a mile from the British settlement; the people were nearly all Mandingoes, and were orderly and well-behaved; they have various tradesmen amongst them, such as blacksmiths, weavers, and shoemakers, but, there are no regular carpenters, tailors, or builders. Those engaged in commerce stand highest in the estimation of their countrymen, and are frequently also priests or maraboos. The huts, which are generally round, are built of dry mud, or sand and mud: the walls are seldom above 6 feet in height and 1 in thickness; the roofs are constructed of bamboo rafters, extending 4 or 5 feet beyond the walls on which they rest, reaching to within 2 feet of the ground. The roofs are conical, the bamboo rafters being bound together at the top, and diverging from a point until, at the outer extremities, they are full 30 inches apart; they are light, and, when well thatched, are impervious to wet, their slope being at an angle of about 50. The ordinary size of the huts is from 12 to 16 feet in diameter: they are without windows, and are, consequently, nearly dark within, having merely loopholes for the admission of air."

During the time Governor Ingram remained at MacCarthy's Island, the kings of Nyambantang and Catabar, with their attendants, paid him a visit, and a treaty for the encouragement of commerce and the suppression of the slave-trade was signed with both of them.

Jan. 1. "This day I had a vast number of visitors from among the black and coloured population, who came to wish me a happy new-year. I thought them as well conducted and far more respectful and polite than persons of their class at home. When it is borne in mind that but very few indeed among them can read or write, much praise is due somewhere for the visible improvement in their habits and feelings. A few short years ago, many

of the persons who this day called to pay me complimentary visits were as utterly uncivilized as it is possible for human beings to be; now they are able to address me in my own language, which is also theirs, for the different tribes of liberated Africans communicate with each other in English only, and their children know no other. This almost incredible change from savage life to one of comparative refinement, has been effected in ten years; for the first liberated Africans sent here were embarked under my superintendence for MacCarthy's Island, in 1832. After my visitors had departed, I accompanied the Rev. Messrs. Fox and Swallow, Wesleyan missionaries, to Lindoe, a village consisting of a small row of very neat little cottages in the English style, built of brick, and erected by the munificence of the philanthropic Dr. Lindoe. These cottages, 12 in number, have each 4 rooms, and their English appearance is delightful to witness in a place 150 miles in the interior of Africa; they are given, rent-free, to such members of the Wesleyan connexion as the missionary may select from the most industrious and most deserving of his flock."

The Foulahs are decidedly handsome, many of them being of a light copper-colour, although the majority are considerably darker. Their features are regular and good, and, unlike the Mandingoes and Jollofs, they have small mouths, European lips, and noses inclining to aquiline; hair soft and silky, but not woolly: well-defined black eyebrows, long eyelashes, and handsome black eyes; tall, well-proportioned, and of erect and graceful figure; some of the young women are very good-looking, and would be considered beautiful even in Europe. The Foulahs wear great numbers of gree-grees or amulets, composed of paper of all sizes upon which portions of the Koran are transcribed, and covered with silver, copper, or leather. 'I have,' says the author, 'seen men and women so laden with gree-grees, that the shape of their persons was not discernible, and they were apparently as destitute of symmetry as a rum-punchoon.'

Jan 4. The cutter having been dispatched at daylight, with orders to proceed up the river with the flood, Governor Ingram and his attendants followed in the boat at 2 P.M., and at 5 overtook the cutter lying at anchor about a mile below Barsangsang. On the 5th of January passed by Pisania, the place which Mungo Park last started from for Wooll. At Pisania the ruins of a factory are still visible near the river-side; there are at present no inhabitants, although during the time of the slave-trade it was a place of considerable importance. Anchored opposite Lower Coonda Point. At daylight on the 6th the thermometer stood at $57\frac{1}{2}$. Got under weigh with the flood, and reached Coodachay; the banks of the river are here high and covered with trees and

bushes; thousands of guinea-fowls were observed. Reached Foulah Tenda, and had an interview with the chief of Chacoonda, who expressed a desire to enter into a treaty as the other chiefs had done: the terms having been explained to him by the interpreter, he signed the treaty in the presence of the Alcades of Bankoobar and Foulah Tenda, receiving in return the ordinary presents.

8th. "Having landed, visited several native towns in the vicinity of Foulah Tenda, the largest being Bankoobar, inhabited wholly by Sononkays. On the 9th arrived at Bannatenda, and in the afternoon had an interview with Mamadoo Wally, the chief of Coro, with whom a treaty for the extension of commerce and the suppression of the slave-trade was concluded. Leaving Bannatenda, passed several trading villages, and on the 11th anchored off Fattatenda; here several of the king of Woolli's ministers were waiting for us, who reported that their master was too infirm to meet us at Fattatenda, but would be glad to see us at Medina, a town 30 miles inland. Horses having been provided, started for Medina; at noon reached Jaconda, where we remained for the night; this town is unusually clean, and strongly protected by mud walls against any aggressions. The heat during the day had been perfectly oppressive, the thermometer in the sun rising to 125°. Leaving this town on the following morning, we arrived at Medina about 11 A.M. The soil of this part of the country appeared to be excellent, capable of producing anything that will grow within the tropics. Medina, the chief town in Woolli, is protected by a strong mud wall, and a stockade and ditch; its population about 2,000. It is almost exclusively inhabited by Sononkays, or fighting-men; these Sononkays are most drunken fellows, indulging in the free use of ardent spirits whenever they have an opportunity. Having been introduced to the king, the subject of the treaty was entered on: and the particulars being explained to him, he demanded what present he was to receive; expressing himself satisfied, the treaty was duly executed with certain formalities, the king signing it in Arabic—Mr. Pignard having previously rendered it into Mandingo, and the king's 'Wooday' repeating it to his master. Returning to Fattatenda, embarked and proceeded up the river for Cantalicunda; owing to strong freshets, and the flood tides being scarcely perceptible, made but little way; and it was the afternoon of the 17th before we reached within 5 miles of that place. Preparations were now made for proceeding early the following morning to the Falls of Barracunda in the boat, all further progress in the cutter being impracticable. These preparations were, however, set aside, in consequence of numerous reports that the Sononkays purposed

opposing our passage, and firing upon the boat from the banks of the river, unless they received a large present of rum."

A consultation being held, it was determined to abandon the visit to the Falls, and orders were given for returning with the evening ebb. Landed, and having obtained an interview with Cantaliba, an old chief, a treaty resembling that made with the other chiefs and petty kings was signed in duplicate, one copy being retained by either party. Returning on board, the cutter was got under weigh for Bathurst, which place was reached on the 25th of January.

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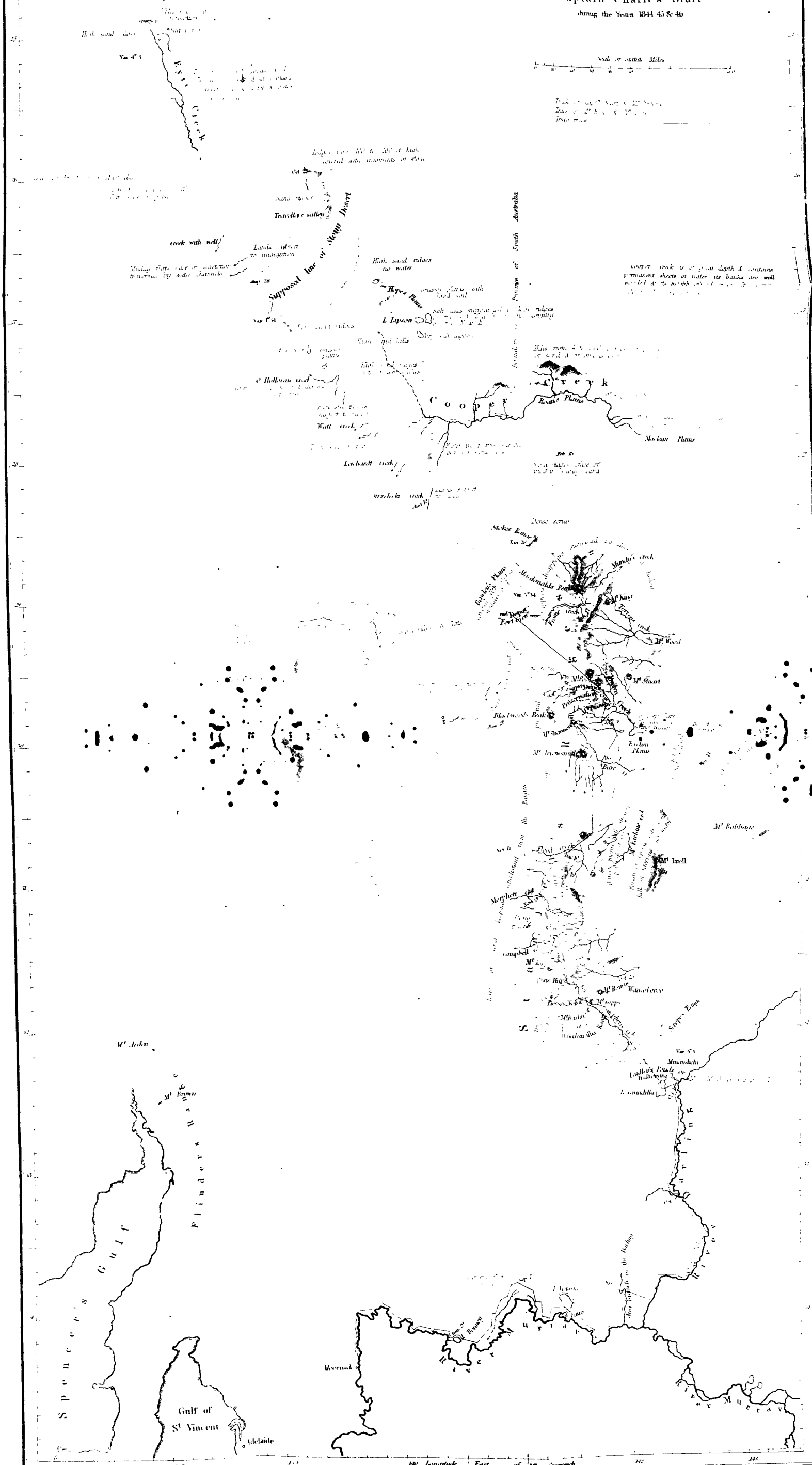
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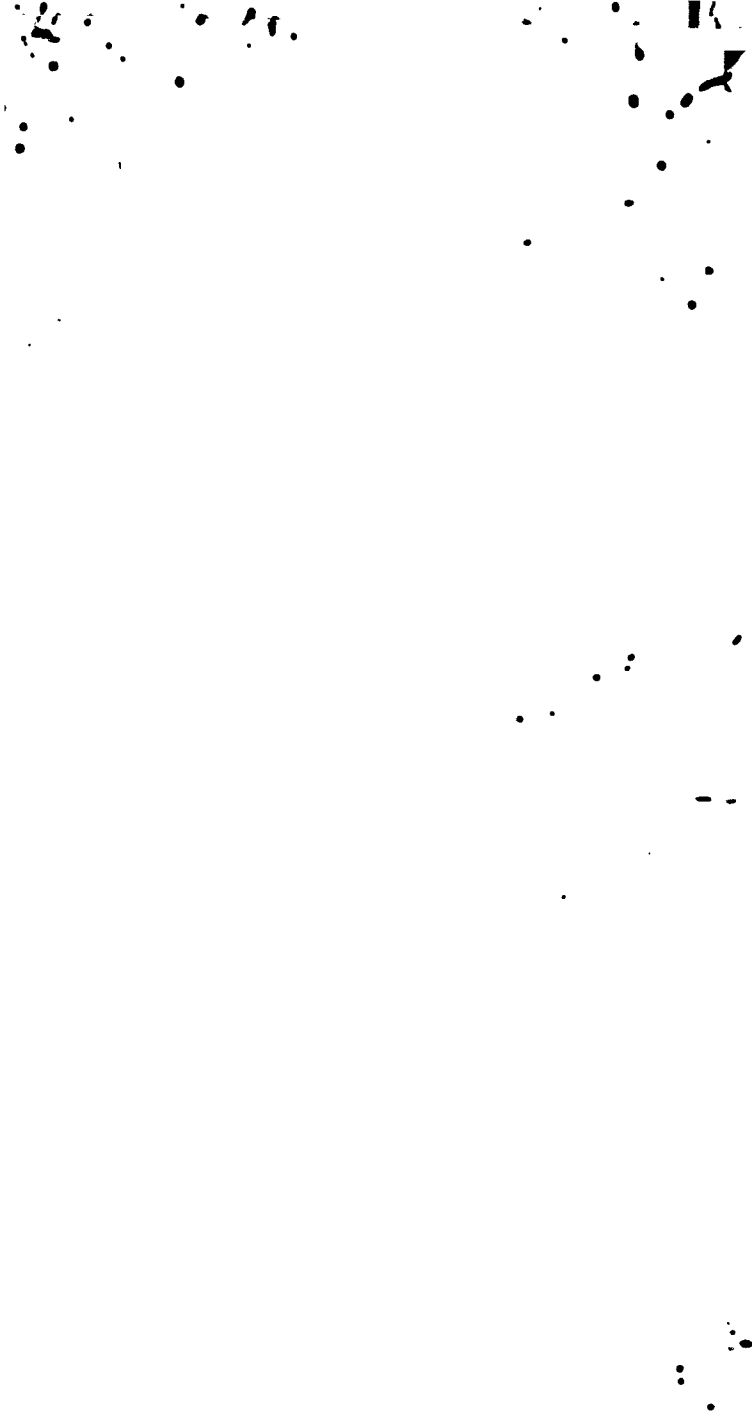
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Map of the Country explored
by the
CENTRAL AUSTRALIAN EXPEDITION
under the command of
Captain Charles Sturt
during the Years 1844-45 & 46

Scale of Statute Miles

Track of the Expedition
from 1844 to 1846
from 1846 to 1848





The
YANG-TSZE-KIANG
to illustrate paper
by
Lord Colchester & Capt. Collinson R.N.
1847.

60
English Miles

Yangtze-kiang

Hoang-chow

CHINESE SEA

CHINA

Longitude East from Greenwich

Survey of the
ISTHMUS OF MOUNT ATHOS

By the Officers of H M S Beacon

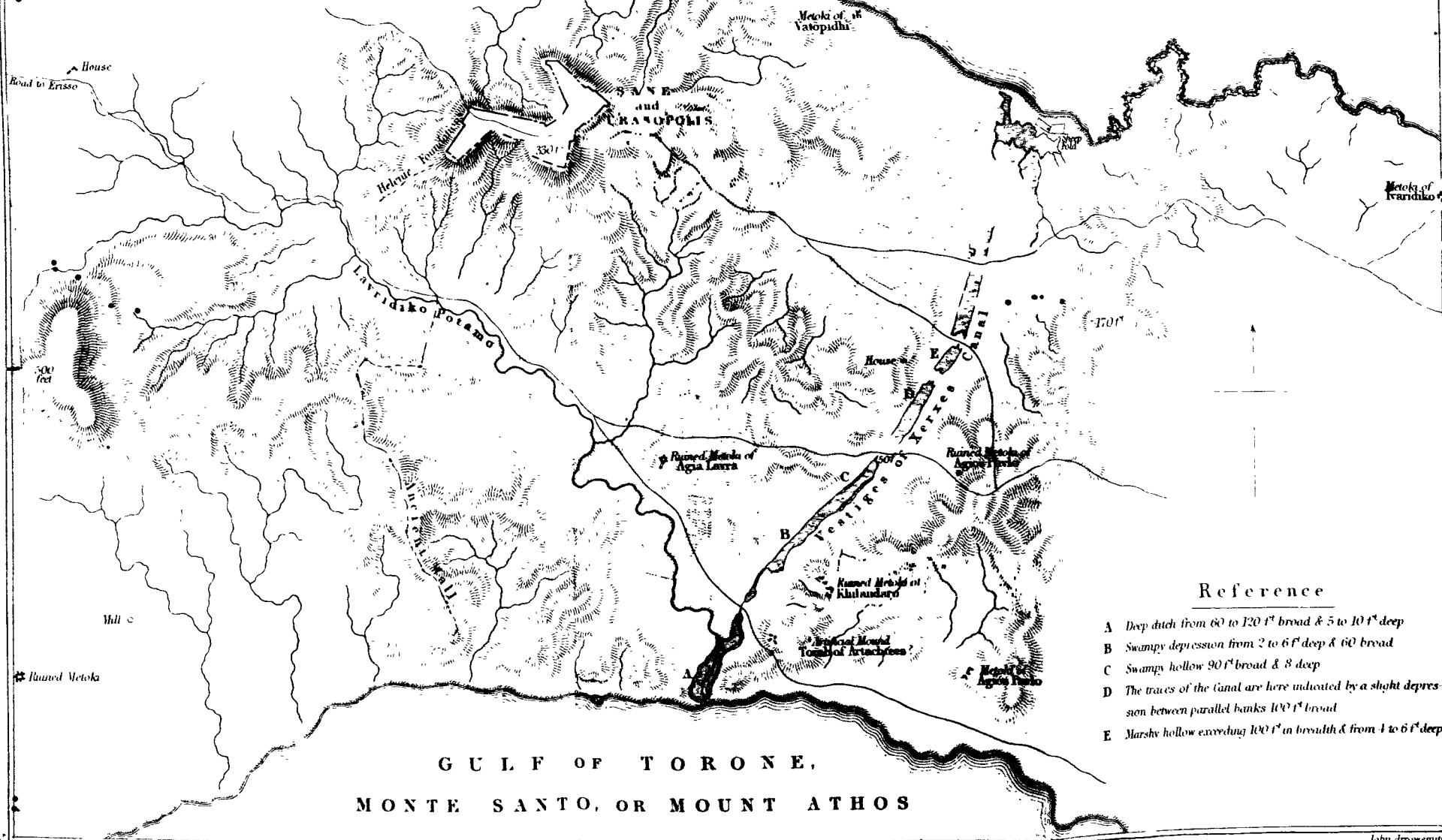
to illustrate a paper on the
Canal of Xerxes.

By L. T. Sprutt R N

GULF OF ACANTHUS

Scale of Yards
50 100 250 500 750 1000 1250

House
Road to Erraso



Reference

- A Deep ditch from 60 to 120 f^t broad & 5 to 10 f^t deep
- B Swampy depression from 2 to 6 f^t deep & 60 broad
- C Swampy hollow 90 f^t broad & 8 deep
- D The traces of the Canal are here indicated by a slight depression between parallel banks 100 f^t broad
- E Marshy hollow exceeding 100 f^t in breadth & from 4 to 6 f^t deep



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